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ABSTRACT

The process of identifying items in a library's collection by assigning to each a unique machine readable code has been generally referred to as barcoding. Barcoding is often one of the first critical projects a library will embark upon in the process of automation. This Systems and Procedures Exchange Center (SPEC) kit addresses many of the major issues and problems in barcoding by reviewing the experiences of Association of Research Libraries (ARL) member libraries that have undertaken barcoding projects. The kit is based on a comprehensive survey of 88 ARL members conducted in early 1986. Libraries selected to participate were those that indicated in the Office of Management Studies Automation Inventory that they were either modifying or planning automated circulation systems, or that their systems were operational. Extensive survey results are provided in the kit as are 12 documents dealing with preliminary considerations for barcoding, 19 documents describing barcoding projects, 1 example of ongoing procedures, 8 barcoding project summaries, and a list of selected references. (THC)

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The process of identifying items in a library's collection by assigning to each a unique machine readable code has been generally referred to as barcoding. Barcoding is much more than simply affixing a coded label to each item in the collection. The process must include, by some method, the linking of each code to an appropriate item record in the library's bibliographic database.

Barcoding is often one of the first critical projects that a library will embark upon in the process of automation. It is a project of major significance with regard to staffing and financial investment. Initial staff and user attitudes toward the new system may be influenced by their impressions of the success or failure of the barcoding process. Decisions regarding database corrections and maintenance made during barcoding may have long term effects.

SPEC Kit #124, Barcoding of Collections in ARL Libraries (May 1986), addresses many of the major issues and problems in barcoding by reviewing the experiences of ARL libraries which have undertaken barcoding projects. The kit is based on a comprehensive survey of 88 ARL members conducted in early 1986. Libraries selected to participate were those that indicated in the *OMS Automation Inventory* that they were either modifying or planning automated circulation systems, or that their systems were operational. Extensive survey results are provided in the accompanying kit.

PRELIMINARY CONSIDERATIONS IN BARCODING. Most automated systems are designed to utilize either barcodes or optical character recognition imprints (OCR). The majority use barcodes but a number of systems can also accept OCRs and other identifiers as well. Usually the system vendor will indicate a preference. Barcodes are easier to scan than OCRs in that scanning equipment must be able to read each entire OCR symbol, while barcodes are scanned by reading any path across the label which touches all bars. Barcodes are also easier to print than OCRs.

Either barcodes or OCRs may be pre-assigned to bibliographic item records and thus become "smart". The computer assigns a unique barcode number to each item in the collection during database processing. Then during label production, the computer associates the appropriate call number and copy number with

each barcode. Arranged in shelf order for ease of application, these smart barcodes are earmarked for specific items in the library's collection. Smart barcodes are usually applied prior to bringing up the circulation system.

The creation of smart barcodes entails extra costs in both tape processing and label production and their use can reveal numerous problems in the database demanding attention. The alternative is to use non-smart, or "dumb" barcodes which must be manually linked to database item records. Dumb barcodes may be applied at random in the collection thus eliminating the need for the careful matching process required by smart barcodes. Dumb barcodes must, however, at some point be linked to item records in the database. Often these item records must be created during this linking step. Whereas smart barcodes alert the library to database problems early on and provide for a sort of inventory during their application, dumb barcodes do not reveal these problems until the linking step occurs. From that point onward the clean up and correction process is more or less the same.

The decision to use smart or dumb barcodes may be based on financial, logistic or time considerations, but neither approach will guarantee an error free linking process. This is undoubtedly one of the most complex phases of library automation and will evolve into an ongoing project for months or even years.

The location of barcodes on library materials is another preliminary decision to be made. If the library can afford duplicate barcodes, applying one inside the cover of the book and one outside on the cover or spine of the book will provide maximum protection and flexibility. The inside label is protected from wear and fading, and if book pockets or date due slips are used, placement near these points is efficient during check out. The outside label allows for inventory or in house scanning without having to open the book. If only single barcodes are used, the inside location seems to be most practical and efficient over the long term.

If smart barcodes are employed, the library must consider the value of a preliminary shelfreading and/or inventory project before barcoding begins. Accurate shelf arrangement is a tremendous asset in streamlining smart barcoding. Inventories are more cumbersome and may not be worth the effort. The

process of matching smart barcodes to items is in itself a partial inventory of sorts. (See OMS Occasional Paper #10, "A Guidebook for Shelf Inventory Procedures in Academic Libraries," July 1985.)

Pilot testing is another option to consider with smart barcodes. Sample lists of barcode data can be generated, often well in advance of actual barcode label production. By taking these sample lists through the various barcoding steps, library staff may preview problems ahead, assess the quality of barcode production, and experiment with project organization and procedures.

PHYSICAL APPLICATION OF BARCODES. Whether a library uses smart or dumb barcodes, it will most likely launch some sort of project to apply barcodes and, in the case of dumb, link barcodes to item records prior to bringing up the circulation system. Without some sort of preliminary barcoding project, there will undoubtedly be a heavy on the fly linking workload simultaneous with circulation start up.

Some libraries begin applying barcodes many months, or even years before bringing up circulation systems. In these cases, the barcoding effort is usually incorporated into the routine work assignments of regular staff. This allows for a relaxed and deliberate barcoding process.

In other instances time constraints do not permit the leisurely approach and libraries must concentrate barcoding over a fairly short period of time. This approach requires the complete support of the library staff, perhaps assisted by outside volunteers or paid part time workers. These special projects usually begin eight months or less before circulation start up and are carried out over a relatively short period of time, several days to a few months. Training and documentation tend to be more structured for the intense project and motivation and morale factors are stressed.

It is obvious that the more time allowed for barcoding, the more thorough, accurate and routine a job it becomes. There are, however, some positive aspects of the intense project approach. This approach brings more staff into early contact with the new automated system. If the project goes well it can establish positive staff attitudes and a team spirit with regard to the system. A successful project can also provide good initial publicity for the system, especially if outside volunteers have participated.

ONGOING SUPPORT FOR BARCODING.

Barcoding continues for the life of the library's circulation system. After the massive job of barcoding the existing collection is completed, new acquisitions are added and binding and repairs necessitate barcode replacement. Libraries must establish procedures for the perpetual barcoding ahead.

For new acquisitions, libraries tend to either apply barcodes at point of receipt, cataloging or spine labeling. Usually barcoding is accomplished before books reach circulation for shelving. Regardless of the use of smart barcodes initially, libraries frequently switch to dumb barcodes for new additions to the collection. If a library produces barcodes in house, it may be quite simple to generate a smart label from local bibliographic data.

Barcode replacement is simplest when a new label is affixed and wanded into the appropriate field of the existing item record. Some systems require creation of a new item record in addition to barcode replacement. In some cases libraries prefer to make a duplicate barcode to replace the one damaged or lost, rather than edit the database. All these approaches become routine over time and are small considerations compared to the initial barcoding effort.

Barcoding the library's collection involves many decisions and always presents complex issues for resolution. It is often the first widely visible step in the automation of the library. With careful advanced planning, the barcoding process can set a positive course for future steps in system implementation.

The SPEC Kit on Barcoding of Collections in ARL Libraries (#124, May 1986, 118 pages) includes SPEC survey results, 12 documents dealing with preliminary considerations for barcoding, 19 documents describing barcoding projects, one example of ongoing procedures, eight barcoding project summaries, and a list of selected references.

* * * *

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USES OF SPEC KITS

The Systems and Procedures Exchange Center (SPEC) is a clearinghouse operated by the Association of Research Libraries, Office of Management Studies that provides a central source of timely information and materials on the management and operations of large academic and research libraries. It facilitates the exchange of knowledge and documents through SPEC Kits, which are distributed ten times each year to ARL members and other interested libraries. The Kits include topically-arranged groupings of unedited primary source documents - selected for their value to administrators and decision-makers - that illustrate a wide range of alternative approaches to specific issues.

Kit documents come from general membership surveys and from selected libraries contacted directly by SPEC, and most Kits are produced within six months of surveys. The documents' value comes from their variety of ideas, methods, and solutions. They are not viewed as finished products, but rather as points of departure for a library's planning efforts and as stimulants to innovative approaches to problem-solving. As such, Kits do not present answers or prescriptions for any one library; instead they illustrate how selected ARL members are planning for or dealing with particular issues. The worth of any one Kit to a particular library will depend upon the specific topic covered and the library's stage of development in that area.

Materials are selected according to the following criteria:

- Presents an approach of potential value to administrators and decision-makers
- Timely, and dealing directly with the topic under consideration
- Probability of application of ideas or thinking to other library situations
- Illustrative of actual practice, rather than theoretical
- Understandable, readable communication

All together, the materials should provide a range of alternative approaches that complement each other, provide variety, and stimulate comparison and contrast.

Libraries can take advantage of the Kit compilations in a number of ways. Administrators can evaluate the assumptions, methods, and results of other libraries' approaches; compare and contrast them; and use the learnings in their own situations. Library staff members can use the kits as professional development and current awareness tools. Committees and task forces can use them to begin a review of current practices. And the Kits can identify other persons or places to contact for further information. Back-up files in the SPEC office also are available for loan to member libraries. In addition, SPEC will conduct on-demand surveys or analyses geared specifically for a single library.

EVALUATION

Kit Title/Number _____

1. Which uses did the library make of this Kit?

2. Please indicate how useful the Kit was for these purposes.

☐ Very Useful ☐ Quite Useful ☐ Somewhat Useful ☐ Not Useful

3. Do you have suggestions for this Kit or for future Kits?

(optional)

NAME _____

LIBRARY _____

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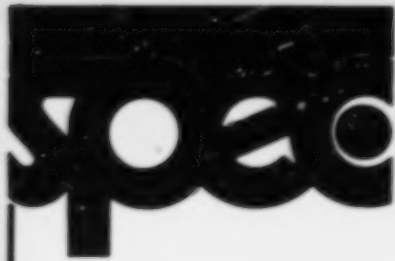
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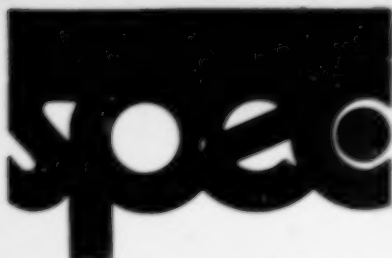
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OMS

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Survey Results



Summary of The SPEC Survey on Barcoding: Results

1. Identify your automated circulation system.

GEAC	17
CLSI	6
In house	6
NOTIS	4
ALIS II (Data Phase)	4
Biblio-Techniques	2
LIAS (Penn State)	1
LS/2000 (OCLC)	1
CARL (Colorado Alliance of Research Libraries)	1
ALIS III (UTLAS)	1
NLS (Network Library System)	1
2. Does your system use:

Barcodes -	35
(OCR) Optical Character Recognition Imprints -	12
Other - 2 (punch cards, magnetic strips)	
(a few systems use more than one medium)	
3. What is the present status of your circulation system?

In planning: barcoding partially completed.	
6	
In planning: barcoding completed.	
1	
Operational: barcoding partially completed.	
26	
Operational: barcoding completed.	
10	
4. Did you employ smart (pre-linked) or dumb barcodes and what were the principal reasons for your choice?

18 smart (pre-linked)	31 dumb
-----------------------	---------

REASONS:

For Choosing Dumb Barcodes:

1. Barcoded in early seventies-smart barcodes not offered as an option at that time.
2. No choice offered by system vendor
3. Financial reasons-couldn't afford tape processing, etc. for smart barcodes.
4. Barcoding made more complex by using smart barcodes, logistics with dumb are simpler.
5. Barcoding was done before library had machine readable database or very limited database only at time of barcoding.
6. Utilized dumb barcodes inserted for earlier system.
7. Not convinced smart barcodes worth the extra money-- slower to match to books; require keeping long term files of labels for books not found; a certain number are never used; mistakes in labeling can nullify initial benefits.

For Choosing Smart Barcodes:

1. With all bibliographic records in machine readable form, decided smart barcodes more efficient since intent was to have majority of collection ready to circulate at start-up date.
2. Speed--linking books to database manually would have taken more time.
3. Much faster, easier, more accurate way of barcoding if your holdings have been kept up to date in your database; good chance to do partial inventory and discover problems early in your database.
4. Cost effective for bibliographic items in machine-readable form.

Several respondents indicated that they utilized both smart and dumb barcodes. Often smart were used for first copies of monographs and dumb used for added copies and serial volumes. Also, smart were used for initial databases while dumb replaced smart for later additions to the database. Very few libraries actually produced more than one initial run of smart barcodes.

Would you make the same choice again?

Yes.	15 (who chose smart barcodes)
	13 (who chose dumb barcodes)
No	4 (who chose dumb barcodes)

Reasons for Changing:

1. Would choose smart barcodes because of greater control and flexibility.
 2. Would choose smart barcodes if machine readable database were ready--labeling is time consuming but benefits to inventory are worth it.
 3. Time spent entering barcodes, matching with records and following up errors would probably have been reduced by pre-linking and barcoding with smart.
 4. On-the-fly barcoding presents too many problems in keeping up. There are problems with accuracy of overdues and status of books.
-
5. Who was your barcode vendor?

Data Composition	11
Produced in house	8
CLSI (CompuType)	4
Dataphase	5
Davis & Henderson	5
Watson Label Products	1
Intermec	1
Data Symbology	1
Griffin Tech	1
R. L. Crain	1
ID Recall	1
Marc Data	1
 6. If you used smart barcodes, what vendor processed your database?
 - a. On campus. (8)
 - b. Data Composition. (1)
 - c. GEAC. (1)
 - d. Florida Center for Library Automation. (1)
 - e. SOLINET. (1)
 - f. Brodart. (1)
 7. Did you produce technical specifications for barcodes?
Yes (20) No (23)
 8. Where did you place the barcode label (or labels if more than one was used) on your materials?
 - a. (28) One label, inside book, generally in vicinity of the "date due slip" or book pocket.
 - b. (5) Two labels, one inside book, in vicinity of the "date due slip" or book pocket and the other somewhere on the cover or spine of the book.

c. (1) Two labels, one in the vicinity of the of the "date due slip" or book pocket and the other on the title page.

d. (1) Three labels, one in the vicinity of the "date due slip" or book pocket, one on the outside front cover, and one on the back of the shelf list card.

Why?

1. When only one barcode was used, respondents indicated inside placement was desirable for protection of barcode and it was also efficient to place it near either a book pocket or date due slip (both of which are apparently still in heavy use in automated libraries).
2. Libraries who used two barcodes usually placed one inside--for protection and co-location with pocket/date due slip--and one outside on cover or spine--to assist in future inventory projects.
3. The one library that used triple barcodes placed the third one on the shelf list card to facilitate database linking of dumb barcodes.

Note: Examples of barcode placement on non-book materials are included later in this Kit.

9. Did you apply barcodes prior to system start-up?

37 Yes 4 No

9a. How far in advance of system start-up did you begin your barcoding project?

1 month - 1
2-5 months - 6
6-8 months - 10
10 months - 1
1 year - 5
2 years - 1
2 1/2 years - 3

Several respondents indicated they had long, on going barcoding projects -- dating back in one case to 1970.

9b. What was the duration of the barcoding project?

9c. How many items were barcoded during the project?

The ranges in this answer were extremely wide with one obvious undetermined factor being the number of staff assigned in each case.

For libraries that used smart barcodes, the range had a high of 433,000 labels applied in 8 days or 5956 staff hours (around 54,000 per day) to 513,000 applied in 5 years (around 2000 per week). For libraries that used dumb barcodes, the rates were surprisingly lower overall- a high of 775,000 in 8 months (around 24,000 per week) to a low of 250,000 in three years (around 1600 per week.)

In general the indications were that libraries using smart barcodes tended to mount intense, well organized projects to apply labels, while libraries using dumb barcodes took a more leisurely pace, often over a much longer period of time. In fact a number of respondents stated that they really did not have a "project" per se, but rather considered barcoding a long term effort spread over several years.

Since there was such a wide range in responses, there seemed to be no safe average production rate from these questions. Intensity and staffing are the critical factors in determining the productivity level.

- 9d. If you used smart barcodes, did you shelf read and/or inventory your collection prior to barcoding?

7 Shelf read only	1 Inventory only
1 Both shelf read and inventory	11 Neither

- 9e. If you used dumb barcodes, did you make any attempt to link these with appropriate database item records prior to system start-up? 26 Yes
7 No

If yes, how did you do this?

1. Several used some variation of this procedure: duplicate dumb barcodes were used; one was placed on book, the other on old circulation card, shelf list card or database printout (in call number order); later, linking was done by calling up database record by call number and wandling barcode into appropriate field.

2. Others indicated that books were caught as they were returned in circulation and then barcoded and linked to database before they were reshelfed. Some libraries only attempted this in high-use areas of the collection.

3. A few libraries went to the stacks and brought books out to a processing point for linking.

- 9f. If you did not link barcodes with item records before start-up, what problems, if any, did you have linking "on-the-fly"?

1. On-the-fly linking is time consuming and error prone. Linking is often ambiguous in areas when the database is "messy".

2. A number of operator errors can occur, e.g. items linked to wrong bibliographic record and duplicate bibliographic records created after an erroneous

search.

3. On-the-fly linking produced a heavy workload. If done at point of circulation, it often results in long waiting lines leading to frustration and pressured, poor quality work from staff. If done behind the scenes (after circulation or at check-in), large backlogs of items waiting to be linked can accumulate. Related problems are inaccurate overdue notices and status of materials.

- 9g. Did you do a pretest or pilot to prepare for the main project of applying barcodes? 11 Yes 26 No
If yes, did the results of the pretest prove to be accurate?
9 Yes 2 No

- 9h. How did you deal with materials in circulation at the time of your barcoding project?

1. The large majority barcoded books upon their return from circulation. Some variations (for smart barcodes) on this theme were:
 - a. Color dot applied to barcodes for books checked out, books returned were searched in these barcodes.
 - b. Left over barcodes were taken to sorting area and books labeled there before returning to shelves.
 - c. Barcodes were clipped to check out cards and then applied immediately on return.
 - d. Holds were placed on the items to be barcoded so they were caught immediately on return.
2. Other approaches were:
 - a. Books needing barcodes were recalled from faculty and graduate students. One month fine amnesty given. Some trips were made to offices and home to retrieve books.
 - b. Books were barcoded at next checkout.
 - c. System start-up was timed so that all manual checkouts would be due in 1 month's time
 - d. Stacks were rechecked periodically to insert leftover barcodes.

- 9i. Briefly describe your barcoding project, or enclose descriptive material.

For full descriptions, please see kit documents.

Some summary of responses follows:

- (1). Number of staff utilized varied from small specialized teams to the entire library staff plus outside volunteers. Some libraries made barcoding strictly a circulation department duty. Others hired temporary staff so as not to disrupt normal daily procedures and workflow.
- (2). Training for barcoding was often delegated to the head of circulation but others who had this responsibility were specially hired project coordinators, automation librarian, CLR management intern, catalogers, and the Assistant Director for Public Services. Training programs ranged from several days to 20-30 minute sessions using anything from elaborate handbooks to one page instruction sheets.
- (3). Nearly all libraries remained open during the entire barcoding project. One was closed for 2 days and another closed to all but university patrons. Others reported disruption of service due to remaining open. One library's consultant advised them to close during barcoding. The library chose to remain open but did close portions of the stacks where barcoding was going on each day.
- (4). Special motivators and incentives:
 - (a). T-shirts for barcoders (with barcode labels on them, project logos, etc.)
 - (b). large thermometer displaying daily progress in barcoding.
 - (c). coffee/doughnuts for barcoders; wine/cheese celebration at end of project.
 - (d). special project song composed ("Bar-Codin' Blues")
- (5). Special aids:
 - (a). 1/2hr. slide show for repetitive training.
 - (b). signs in stacks "labelers are here" to alert users to barcoding activity.
 - (c). notices in study carrels warning of temporary disruptions due to barcoding project.
- (6). Time studies.
 - (a). 4-5 labels per minute (smart)
 - (b). 2-3 labels per minute (smart)
 - (c). .7 labels per minute (dumb)
 - (d). .8 labels per minute (smart)

9j. What problems did you encounter during the barcoding project and how did you manage or resolve the problems?

Problems:

(1). barcoding errors: faulty label stock, printing problems, erroneous duplicate barcodes, copy numbers left off barcodes, lost call numbers on barcodes, print on barcodes too small, no space around labels to record problems.

(2). stacks problems: misshelved books, missing books, damaged books.

(3). database problems: analytics and "bound withs", no detailed holdings kept, prior database maintenance was sloppy, dashed-on entries, errors in transfers and cancellations.

(4). human errors: wrong labels attached, errors at point of linking.

(5). other problems/advice:

(a). need reasonable length of time to inspect barcodes before starting labeling project.

(b). acid-free labels may be needed for rare books.

(c). test run or pilot would have alerted staff to numerous problems.

(d). for 800,000 items labeled, 200,000 problem slips were generated.

(e). be aware that there is more to barcoding than just labeling - it is a commitment to some degree of physical inventory as well.

(f). careful management of OCLC archive tapes cannot be overemphasized.

(g). smart barcodes may raise more problems early but are a way to "proof read" your database.

Problem Resolution:

Most indicated that problem resolution was a long process, usually handled in the cataloging department. Most libraries utilized some sort of problem report form for communicating to cataloging.

10. If you did not apply barcodes prior to system start-up, have you experienced problems as a result of that decision?

11 yes 5 no

If yes, explain:

(1). The workload for linking is almost unmanageable.

(2). Large backlog of items waiting to be entered.

(3). Circulation staff data entry is inconsistent; many poor quality bibliographic records and long queues.

(4.) Title page is photocopied at check out and entered later; it took months for data entry to catch up with circulation.

ON-GOING SUPPORT AND MAINTENANCE

11. If you used smart barcodes, have you produced additional smart barcodes for items added since the initial project?

9 Yes 8 No

If YES, how are presently applying these barcodes?

- (1). Smart barcodes are produced from bibliographic files of items newly cataloged and applied before leaving technical services.
- (2). Smart barcodes were produced for a catch-up tape following the initial database load. A small scale project to apply these was done.
- (3). Ordered books are assigned barcodes. These are applied before cataloging.
- (4). Smart barcodes are printed in house to replace those lost in binding.

12. How are you barcoding items which have not been barcoded until point of circulation?

- (1). New item record created and barcode applied at check out. (10 responses)
- (2). Circulate book on temporary item record; book routed to tech services on return for barcoding. (8 responses)
- (3). Barcoded at check out but data entry done later. (12 responses)
- (4). System assigns temporary ID number to book at check out; barcode applied as checked in. This bypasses delay in system filing time. (1 response)

13. How are you barcoding new acquisitions (coming through technical services)?

- (1). Barcoding in ordering unit. (4 responses)
- (2). Barcoded in cataloging as record is downloaded or otherwise entered into local database. (26 responses)
- (3). Barcoded by collection maintenance staff. (1 response)
- (4). Barcoded in circulation department. (1 response)
- (5). Barcoded in binding unit as last step when books are marked. (1 response)
- (6). Barcoded in binding unit prior to cataloging. (1 response)

14. How do you handle barcode replacement as a result of damage and/or repair?

- (1). Barcode is replaced with new one and the new one is entered over old into item record. (17 responses)
- (2). Old item record deleted; new one entered. (3 responses)
- (3). New duplicate label created. (7 responses)

- (4). old barcode is reused. It is pulled out and re-applied with mylar tape. (1 response)
15. What problems, if any, are you having with barcodes or the process of barcoding at the present time?
- (1). None. (8 responses)
 - (2). Operator errors in data entry, etc.. (3 responses)
 - (3). Physical problems with barcodes: fading labels, adhesive not sticky enough, problems reading labels with extra coating for protection, barcodes wearing out.
 - (4). Equipment: new light pens not scanning older labels, problems with TPS equipment, 8% not read on first scan.
 - (5). Staffing: not enough staff to barcode entire collection --manual circulation file still has 6500 charges.
 - (6). How/where to apply barcodes to non-book materials.
 - (7). Patrons tearing out barcodes (some think it is part of the security system).

ADDITIONAL COMMENTS

- (1). We will produce CODABAR labels for other libraries.--University of Waterloo.
- (2). We switched to laminated labels from those requiring separate mylar covering. Laminates are faster to apply but easier to remove.
- (3). Be sure to check every new barcode shipment for corrections and physical quality of barcodes.
- (4). Pre-barcoding inventory is highly recommended.
- (5). By comparing items on shelf list when barcoding, we have most complete inventory of collection in over two years.
- (6). As part of retrospective conversion project, dumb duplicate barcodes were used to label piece and shelf list card. Thus, barcodes were entered during conversion.
- (7). Plan to use special staff for barcoding and keep regular staff involvement in barcoding to minimum. This works well but still has impact on daily operations.
- (8). One half of our over 1 million volume collection is barcoded. About 10% is converted annually on-the-fly. This percentage is dropping 1-2 points per year.



OMS

System and Procedures Exchange Center

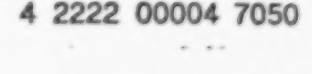
Preliminary Considerations

State University of New York at Albany

University Libraries

Barcode Specifications

1. Barcodes shall conform to GEAC Barcode Specifications (see Appendix 1).
2. Barcode labels shall be approximately 2 inches wide and 5/8 inches high and shall contain a fourteen digit number in CODABAR barcode format with the same number in eye-readable format underneath. Each run of labels shall be able to be produced in "singles", "doubles", or "singles with detachable eye-readables" as shown in the following examples:

<u>single barcode</u>	<u>double barcode</u>	<u>single barcode with detachable eye-readable</u>
 3 6098 01640194 7	 3 6098 01640193 9	 4 2222 00004 7050
	 3 6098 01640193 8	 4 2222 00004 7050

3. Barcodes shall be sharp and dense and shall be coated or impregnated with transparent mylar, plastic, or latex protective material. The barcodes shall be resistant to fading, and the label material shall be of uniform color that resists darkening and mottling.
4. All barcode labels shall have a permanent adhesive backing. Labels shall be guaranteed not to fall off for at least five years when applied according to vendor instructions.
5. The format of the fourteen digit barcode number shall be as follows:
 - a. digit 1 - indicates whether the label is for an item or a patron (e.g. 2 for patron, 3 for item).
 - b. digits 2 - 5 the same for all labels. Identifies the agency (e.g. 9089 for SUNY Albany).
 - c. digits 6 - 13 - a unique number for each item or patron label, sequentially assigned to consecutive labels or pairs of labels as specified by the agency for each order.
 - d. digit 14 - *MOD 10 check digit.*
6. The MOD 10 check digit shall be automatically calculated the same way as calculated by the GEAC circulation control system.
7. The bidder is responsible for contacting the GEAC Representative to ascertain that the bidder's barcode labels will meet the GEAC circulation system's specifications.

Barcode Specifications

-contd.-

8. Within the eye-readable portion of the barcode label, digits 6 - 13 (item/patron number) shall be separated from the digits before and after for easy reading.
9. Labels shall be printed in sheets with numbers running consecutively across in rows rather than down in columns (see Appendix 2 for example).
10. The bidder shall include examples of barcodes meeting the above specifications with the bid.
11. The bidder shall use quality control procedures which include the successful machine-reading of at least one barcode on every fiftieth page of every shipment of labels.
12. The bidder shall provide replacements for non-readable barcodes. The bidder will not be required to replace the identical barcode numbers that are non-readable unless the number that are non-readable exceed five hundred consecutive numbers.
13. Acceptance of each shipment of barcode labels shall be subject to successful machine-reading by GEAC barcode-reading equipment.
14. Labels shall be shipped within thirty days of receipt of order. The bidder shall send a sample of labels for approval by the purchaser prior to production and shipment of the full order.

GEAC Representative

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GEAC Computers
Library Information Systems Division
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Markham, Ontario, Canada L3R 1B3
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SUNY Albany Libraries Contact Person

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GEAC Bar Code Specifications

The CODABAR retail identifier is a linear bar code which contains the following characters:

- . Ten numeric characters
- . Six control characters (one optional plus -,S,/ ,:,.)
- . Eight start-stop characters (two optional plus a,b,c,t,n,*)
- . Twenty-six alpha characters

The density of encoded characters is 10 characters per inch for the numeric set. All character designations are specified in Table I using the exact dimensions for 10 characters per inch.

Each numeric character is represented by seven bits or binary digits consisting of four dark bars and three light spaces, plus an intercharacter gap. A binary "1" is represented by a wide dark bar or wide light space; a binary "0" is represented by a narrow dark bar or narrow light space. The ratio between the narrow bar or space and wide bar or space has been chosen to yield adequate differentiation between ones and zeros, while allowing for varying character densities. This is the most efficient utilization of the space available for encoding and provides error checking capabilities for both bars and spaces. Figure 3 graphically illustrates the numeric character set assignments.

The following specifications describe the CODABAR identifier as employed at a nominal 10 characters per inch.

1.1 STROKE DIMENSIONS

1.11 STROKE LENGTH

Character bar heights may vary depending on the type of scanning and message length. For hand scanning of a 24 character record, the recommended optimum height is $0.320 \pm .0.030$ inch.

1.12 STROKE WIDTH

A binary "0" is represented by a dark bar of width 0.0085 inch or a light space of 0.0085 inch.

A binary "1" is represented by a dark bar of width 0.0190 inch or a light space of 0.0190 inch.

The ratio of wide elements (bars or spaces) to narrow elements (bars or spaces), is nominally 2.24 to 1.

Tolerances for bars and spaces at ten characters per inch are given in Table 1.

1.13 STROKE ANGLE

The linear bar code is a series of straight parallel lines nominally perpendicular to a base or reference line. A tolerance of 5° tilt relative to the reference line is acceptable.

1.2 CHARACTER WIDTH

1.21 NUMERIC CHARACTER WIDTH

The numeric character set has an overall nominal width of 0.0805 inch with a nominal intercharacter gap of 0.0195 inch. Because of the comparison of bars to bars and spaces to spaces, and the odd parity of both bars and spaces, the numeric character provides for a parity checking on both bars and spaces. For illustration of characters in binary and bar codes see Figure 3. Bar and space dimensions are given in Table 1, in Appendix A.

1.3 ENCODED MESSAGE

1.31 MESSAGE AREA

A typical character has a nominal height of 0.320 ± 0.030 inch designed for hand scanning a 24 character message. Reduced heights are permissible for shorter message lengths if required by label or package design. Intercharacter gaps must be a minimum of 0.008 inches to provide adequate resolution between characters. However, gap dimensions are not critical because each character is read independently of those preceding or following it and gaps have no information content. A border on each end of the entire message must equal at least one character width. Growth or shrinkage of the code may be accommodated by a commensurate decreasing or increasing of the border.

1.32 VERTICAL AND HORIZONTAL BOUNDARIES

The minimum border dimensions are 0.100 inch at each end of the message. The border dimension above the encoded message is not critical. The boundary area below the encoded message will normally include the human readable digits associated with the code and this border dimension is not critical.

1.33 ALIGNMENT

The bar code can be read bi-directionally and need not be aligned to a base or reference line.

1.34 SPACING

The intercharacter gap must be 0.008 inch minimum. Maximum width of intercharacter gap is limited only by the total space available for the entire message.

1.35 SKEW

The printed code need not be oriented or aligned to a reference point or line. Individual characters should not be misaligned more than 5° from adjacent characters.

1.36 LINE SKEW

The centerline of the printed code need not be aligned to a guide edge of the media, and there is no angular tolerance requirement. Enclosed messages may be read in any orientation within the scanning plane.

1.4 EMBOSMENT

Maximum depression or embossment of the printed code should not exceed 0.002 inches in order to minimize shadow effects.

1.5 SURFACE CURVATURE

The radius of curvature of the bar code is not critical as long as a proper viewing angle can be maintained with the scanning pen as specified in 1.7.

1.6 VERTICAL DISPLACEMENT

The allowable vertical displacement between the scanning pen and the surface of the encoded media is limited by the depth of field of the pen, and should be adequate to read through most transparent packaging films.

1.7 VIEWING ANGLE

A scanning pen should be capable of any tilt angle up to 45 degrees from perpendicular.

2. OPTICAL PARAMETERS

2.1 SUBSTRATE REFLECTANCE

The bar code system is insensitive to the light scattering properties of the substrate, except to the extent to which background reflectance is affected.

2.2 BACKGROUND REFLECTANCE

2.21 BACKGROUND DIFFUSE REFLECTANCE

Background diffuse reflectance need not be specified as a separate parameter, as it is integral in the definition of contrast, paragraph 2.41. However, a background diffuse reflectance of 80 percent (optical density 0.1) in the near infrared is desirable. In some instances it is desirable to print the code background in white appearing when printing directly dark or specularly reflecting substrates such as glass or metal foil.

2.22 BACKGROUND COLOR

Optimum background color is white. Other background colors may be used, providing the contrast guidelines of paragraph 2.41 are obeyed.

2.23 BACKGROUND LIGHTNESS

Background lightness is not specified as a separate parameter. It is integral in the definition of contrast, paragraph 2.41.

2.3 INK FILM REFLECTANCE

The ink film reflectance at a 45 degree angle on a BaSO_4 standard should not exceed 24 percent in the near infrared portion of the spectrum (800 - 950 nm) and should not vary more than 5 percent within the same character.

2.31 INK FILM COLOR

Optimum ink film color is black. Other dark ink film colors may be read, providing the contrast requirements in paragraph 2.41 are satisfied.

2.32 INK FILM GLOSS

Surface gloss is not important, since the hand-held reader is designed to respond to diffusely scattered light.

2.33 INK FILM OPACITY

Ink film opacity need not be separately specified since it is included in the requirements for contrast, paragraph 2.41. A diffuse reflectance of less than 10 percent is desirable.

2.34 INK FILM LIGHTNESS

Ink film lightness is not specified as a separate parameter. It is included in the contrast requirements, paragraph 2.41.

2.4 PRINT QUALITY FACTORS

2.41 CONTRAST

The contrast, defined as the nominal difference in diffuse reflectance between the background and ink film should be at least 50 percent as measured in the near infrared. Measurements should be averaged over an area equivalent to an 0.004 inch diameter circle. Minimum contrast that can be read by a scanner is 30 percent with the scanner held perpendicular to the encoded surface. This provides a safety margin to allow for the presence of stains, smudges, etc. as described in succeeding paragraphs.

Differences in diffuse reflectance are not easily expressed in terms of optical densities. Some indication of the allowable latitude in background and ink film densities can be gained by noting that a satisfactory minimum contrast exists when the background density is as high as 0.4 and the ink film density is as low as 1.0. Similarly, an ink film density as low as 0.3 will be acceptable if the background density is less than 0.10.

2.42 VOIDS AND INK SPECKS

For optimum reading efficacy it is desirable that the missing ink coverage, or "white" spots within bars or the extraneous dark specks between bars, should not exceed 0.002 inch diameter, or subtend more than 25 percent of the area within a 0.004 inch diameter circle.

Overall minimum contrast as specified in paragraph 2.41 should be maintained. Voids or specks larger than 0.002 inch diameter can be tolerated but if they occur more frequently than twice per character, some loss in "first scan" read rate may be encountered.

2.43 EDGE IRREGULARITIES

The maximum area of edge irregularities subtending a 0.004 inch diameter circle must not exceed 25 percent of the area of that circle.

The area of the irregularity is to be measured with respect to the nominal bar edge and should not occur more frequently than twice per character without sacrificing "first scan" efficiency.

2.44 INK FILM UNIFORMITY

Variations in ink film thickness across the code is unimportant as long as the requirements of paragraph 2.3 are fulfilled.

2.45 INK FILL-IN

Ink fill-in should not expand individual bars within characters to dimensions exceeding the tolerances specified in Table 1.

2.46 SHOW-THROUGH

Images on the reverse side of the code surface, the reflectance of the substrate, or the color of the contents within a container may affect the background characteristics of the code. Labels should be properly designed and placed upon articles so that the specifications in paragraph 2.41 are maintained.

OTHER PHYSICAL PROPERTIES

3.1 SCUFF AND SCRATCH RESISTANCE

Test according to TAPPI RC-183 Method A, B, C and D for Board and Paper. Test according to Packaging Institute Test Procedure PL Printing 4t-54 for films.

3.1 -continued-

Tentatively, a minimum of 25 strokes will be required for RC-183 Method A and PL Printing 4t-54. No scratching, smudging, ink transfer, or ink wearing will be tolerated. In TAPPI RC-183 Method B, no ink failure will be acceptable to the limit of the board or paper substrate failure. Tentatively, the paper or board substrate will tolerate a minimum of 25 strokes.

In TAPPI RC-183 Method D, no degree of wet bleed will be acceptable.

Tentatively, 10 rubs without a transfer of ink smear, ink wear, or substrate wear will be acceptable in TAPPI RC-183 Method D.

3.2 WRINKLES

Surface smoothness using a Sheffield Smoothness Tester is 50 ± 10 using TAPPI Test Method 479.

3.3 TRANSPARENT FILM

The bar code can be read through clear packaging films.

3.4 STAIN FILM

Stains or colored contamination of the code surface may be tolerated by the reader if the minimum contrast ratio as specified in paragraph 2.41 is maintained.

3.5 DIMENSIONAL STABILITY

Since individual characters stand-alone, wide variations in dimension change can be tolerated as long as the tolerances within a given character are not violated. Refer to Table 1 for print tolerances at various character densities.

- 25

OCR-A LABEL SPECIFICATIONS

1. Pressure-Sensitive, pre printed labels.
2. Each set must consist of a designated number of identical labels, either side-by-side (two-up) or one above the other.
3. Information on the labels must be printed in the American National Standards Institute (ANSI) OCR-A Font, Size 1.
4. Data Placement and quality must adhere to the standards listed below:
 - A. The labels must be scannable by Recognition Products, Inc., OCR-Wand Readers for OCR-A Data Entry.
 - B. The labels must be Photographically reproduced.
 - C. The labels must be on sheets rather than continuous forms.
 - D. The labels must be sealed and non-smudging.
 - E. The labels must be self-destructing, that is, the labels can not be removed without tearing.
 - F. The stock must be of such a quality to allow labels to adhere to a variety of books and other library bindings.

Check Digit Calculation

1. Number positions from right, including check digit position.

2. Excluding check digit position, multiply each digit by its position.

3. Sum the products

4. Check digit equals the 10's complement of the unit's digit of the sum. (I.e., subtract unit's digit of the sum from 10. If remainder is less than 10, that is the check digit. If remainder is 10, the check digit is zero.)

Example #1

1
09 8765 4321
R01 0000 001X
09 0000 002

0
9
0
0
0
0
0
0
2
11

Check digit
= 9

OCR # =
R01 0000 0019

Example #2

1
09 8765 4321
R01 0011 224X
09 0065 868

0
9
0
0
6
5
8
6
8
42

Check digit
= 8

OCR # =
R01 0011 224

SPECIFICATIONS FOR BAR CODE EQUIPMENT FOR NLS USE

BAR CODE PRINTER

1. Print Output

- a. Must produce labels of visible clarity such that there is an evenness to the bars with no complete vertical or horizontal gaps. White spaces or gaps that do occur in the bars should be very small (pin head size or smaller).
- b. Must produce labels with ideal scan rate (first time scan), with or without overlabel, of 90%
- c. Must produce labels with practical scan rate (Madison current scan rate), for labels with overlabels on top of them: 84% on first scan and 94% on second scan if first try unsuccessful; for labels not having an overlabel: 88% on first scan and 98% on second scan.
- d. Must produce labels that can be read by hand held wand readers currently in use at Madison College Library (Intermec 9300 and 9210 readers with Ruby Wands 1236 and 1240) and by the wand readers that will be purchased from the vendor chosen for readers via this bidding.

2. Maintenance

The following are desirable:

- a. Should require user maintenance by cleaning, in order to avoid mechanical or print quality problems, no more than every 10,000 labels (current Madison rate of cleaning).
- b. Adjustments to machine by a technical service person should be required no oftener than every 250,000 labels (current unacceptable record is twice every 360,000 labels).
- c. Should not require critical fine tuning of circuit boards (current printer requires such) by Madison operations service person.

3. Operation

The following are desirable:

- a. Should require no more than 2 hours maximum of operator training.
- b. Can require an operator (2 hour trained) to be with the machine always while it is operating. But should require that this person directly check the machine to see that labels are being printed correctly only once every 1000 labels (i.e. currently once every hour at Madison). Exception to this would be when stock runs out or the computer program driving the machine is interrupted/ stopped such that immediate operator intervention is needed.
- c. Should have error free feed mechanism and automatic registering of labels upon feed such that labels feed in an even, straight line and stop at proper position for print head first strike. (current machine exhibits ride up of labels on feeding and has to be watched. Ride up temporarily corrected by attaching devices such as paper clip, scissors, etc. to feed mechanism. Current machine also does not always position labels at print head correctly.).
- d. Should print an average minimum of 30 labels per minute for labels directed to the printer by a computer program.

4. Service and Supplies

- a. Vendor should return service calls within same day and deliver replacement parts within 3 days after receipt of emergency telephone order.

The following are optional but desirable:

- b. Service reps and/or departments located within the Madison or Milwaukee area.
- c. Vendor will furnish a list of vendors of supplies for use with this machine (labels, ribbon, overlabel, and cleaning supplies) that the printer vendor recommends will achieve best results.

5. Technical Requirements

- a. Bar-code with interpretation line and three lines of text above bar-code on 2" label stock.
- b. Bar-code is standard CODABAR, 10.0 char/inch
- c. Text is OCR-A, 10.0 char/inch
- d. Stand-alone operation (directly from keyboard)
- e. Self-strip feature to allow removal each label from its backing immediately after printing
- f. Receive-only computer communications protocol (with printer status responses)
- g. Integral keyboard-display or ability to be operated via an attached CRT.
- h. RS-232C serial interface or interface for which vendor supplies specifications for the protocol so NLS can write I/O driver.

Given that all non-optional requirements in sections 1-4 and 5a through h above are met, the following are optional, but desirable:

- i. For a high volume printer:
 - Print speed over 30 labels/minute including a bar-code and top line of OCR-A characters (14 data characters)
 - If impact printer, replaceable print head if damaged/worn
 - Power take-up unit for 2" high stock
- j. It may be desirable to have one set of software drive all bar code printers owned by Madison UW campus. Consequently, the bid printer should have a Computer interface functionally equivalent to that of the Intermec 8132 model bar code printers owned by UW Madison. These support the special software interface and characters as defined on the following two pages:

Current Barcode Printer

11. SOFTWARE INTERFACE

6.4 Printer Function Control, Model 8132

<u>Printer Function</u>	<u>ASCII Character</u>	<u>HEX</u>
General Functions:		
Reset	<	3C
Print	!	21
Skip	=	3D
Quantity	#	23
Batch	~ (preferred) ← (alternate)	7E/5F
Field	, (preferred) ' (alternate)	2C/27
Clear/Begin Line 1 (Top)	^	5E
Clear/Begin Line 2 (Line 1, 3 line model)	[	5B
Clear/Begin Line 3 (Line 2, 3 line model)	\	60
Clear/Begin Bar Code Line	\	5C
Clear All Lines, Begin Bar Code Line	&	26
Clear Lowstock/Inspect Condition	&	26
Bar Code Mode	]	5D
Large Graphic Mode	@	40
Tab	;	3B
Define Tab Length	:	3A
Line Advance	CR	0D
Stop (exit Qty or Batch)	!	7C
Backspace	DEL	7F
Switch Control:		
Increment ON (DEC OFF)	a	61
Decrement ON (INC OFF)	b	62
Clear Switches (all switches except No Echo OFF)	c	63
DC1 ON	d	64
No Echo OFF	e	65
Tags ON	f	66
Message Delimiters:		
STX	)	28
ETX	(	29
Enquiry	ENQ	05

- NOTES: (1) The \ character clears the bottom line and selects bar code mode.
- (2) Characters] (Bar Code Mode) and @ (Large Graphic Mode) must be transmitted after the bottom line has been selected.



SP 036193
SO 802002
TLB/LAW
10/21/77
6/22/78

Current Bar Code
Printer

ON-LINE CHARACTER DEFINITION

MODEL 8132 CODABAR PRINTER

WITH 3 LINES OCR A

PRINTED CHARACTER
OR FUNCTION

ASCII CODE

0	0
.	.
.	.
.	.
9	9
A	A
.	.
.	.
.	.
Z	Z
START/STOP A	(
B	)
C	*
D	' (apostrophe)
-	-
\$	\$
.	.
/	/
:	:
+	+
%	%
>	>
"	"
SPACE (WHITE)	SP
Blank (+)	@
FULL IMPACT AREA	?
RESET	<
CLEAR (ALL LINES)	&
CLEAR LINE 1 (TOP)	[
CLEAR LINE 2	\
CLEAR LINE 3	]
CLEAR LINE 4 (BOTTOM)	^
PRINT	!
SKIP	=
QUANTITY	#
LINE	CR
*FIELD	, (comma)
*BATCH	;
START OF TEXT	STX
END OF TEXT	←

* FOR THOSE PRINTERS EQUIPPED WITH INC/DEC/LOAD FEATURE.

1. Wanding

- a. Must be able to read bar code portion of all labels produced before time of installation of bid reader; i.e., current Madison labels (standard CODABAR produced by INTERMEC bar code printer model 8132 and Data Composition photocomposed, standard CODABAR labels).
- b. For labels as stated above, must have ideal scan rate (first time scan), with or without overlabel, of 90%
- c. For same labels as stated in 1a above, must have practical scan rate (Madison current scan rate) of labels with overlabels on top of them: 84% on first scan and 94% on second try if first try unsuccessful; on labels not having an overlabel: 88% on first scan and 98% on second scan.
- d. The following are optional but desirable:
 - Wand should be easy to use and hold: requiring little change of angle between each label wanded, not requiring only one angle for successful reads, and not requiring extensive training to achieve correct angle for successful reads.
 - Should be designed not to be top heavy (current wands are top heavy and hence awkward to hold and keep at angle)
 - Wand tip should have smooth surface so as not to scratch label if it should touch the label surface.
- e. Resolution should match type of labels in use in Madison (see 1a above) and those labels which will be used based on bid for printer.

2. Technical Requirements

- a. capable of scanning standard CODABAR labels.
- b. perform checks on characters read and send characters on only if correct
- c. provide an audio feedback signal once a label has been read successfully
- d. operate correctly with an IBM 3101 block mode terminal (half duplex mode)
- e. speeds supported: 110, 300, ..., 1200, 2400, 4800, 9600 baud
- f. generates "ODD" parity ASCII characters sent to the Series/1 computer
- g. generates a "CR" turnaround character (postamble)
- h. reads labels of up to 20 characters (at least) and transmits up to 25 (at least) characters (preamble, label, postamble)

The following are optional but desirable:

- i. support RS422 communications with both the 3101 terminal and the Series/1 computer
- j. generates a preamble string which performs cursor positioning for the 3101 display. This string is "ESC-Y-1-2" (set cursor to row 1, column 2). The complete string to be sent to the 3101 (and Series/1) following a successful read of a label is as follows:

ASCII:	ESC	.	Y	.	1	.	2	.	(label text)	.	CR
hex:	0B		59		20		21		...		0D
	<u>fixed data</u>				<u>variable</u>				<u>fixed</u>		

- k. removes CODABAR and CODE 39 start/stop characters from the label text before transmitting the rest of the characters
- l. capable of scanning CODE 39 labels.

The following are also optional, but would be of some value:

- m. support RS232C in addition to RS422 and allow selection by setup switch
- n. allow selection of "send start/stop characters" by setup switch
- o. send the preamble string to the terminal only (the postamble turnaround CR character must be sent to the computer, however)
- p. allow option of generating the preamble/postamble text or not by setup switch
- q. support a "lock up" of the wand scanning function once a valid label has been read. The function could be resumed upon receipt of a character sequence from the computer (e.g., "ESC - G", sound bell character). This would help prevent "double scans" and reduce the possibility of interfering with Series/1-3101 communication.

These would make the wand reader units more flexible for possible library applications.

M.I.T. Libraries - Barcoding Placement

For barcoding of monographs, including: MIT publications, microfiche
microfilm, and retrospective conversion titles; audio-visual materials,
sound recordings, printed music

Size and description

- a. Barcodes measure 2" x 5/8".
- b. Barcodes will be available in pads with 16 pairs of barcodes per sheet.
- c. Barcodes for each volume are affixed to a sheet in vertical order. The upper barcode will be placed on the item; the barcode below, which has the abbreviation "Dupl" in the upper right corner, will be attached to the cataloguer's worksheet.
- d. Barcode numbers will be 14 digits in length:

3	9000	00040001	2
Identifies	Identification	Unique item	Check digit
item is a	number for	number for	
book	MIT Libraries	each volume	

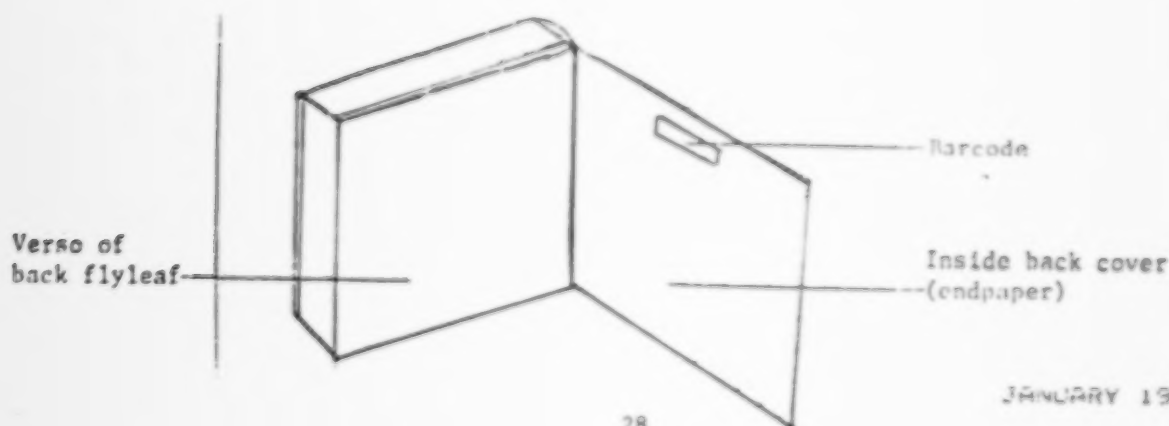
- e. Barcodes will include the barcode, its eye-readable equivalent, and the name "MIT Libraries."

Placement

- a. Monograph: Hardbound, Softbound, 3-Ring binder,
Red rope cover
- Printed music: Hardbound, e.g., monumental

1. Barcode is placed in the center of the inside back cover, i.e., the endpaper, one inch from the top edge of the cover.

2. If the endpaper has important information or a map, which is not duplicated on the front endpaper, the barcode is placed on the verso of the back flyleaf. If the information is duplicated on the front endpaper, the barcode is placed in the proper position on the inside back cover.



Placement (continued)

b. Monograph: Portfolio

Barcode is placed in the center of the inside back cover, one inch from the top edge of the cover. If the portfolio turns in at the top, the barcode is placed in the center of the flap one inch from the top edge.

c. Monograph: In parts
Printed music: In parts

Since the binding decision is made in the Divisional or Branch Library, the barcode cannot be placed on the item at the time of cataloguing. The barcode is, therefore, placed in a small envelope which is paperclipped to the item. The barcode will be affixed after binding by the Processing Librarian.

d. Monograph: In slipcase

Barcode is placed on the item in the proper position for both hard- and softbound volumes. If the item is a monograph-in-parts, the barcode is placed in a small envelope which is paperclipped to the item. The barcode will be affixed by the Processing Librarian.

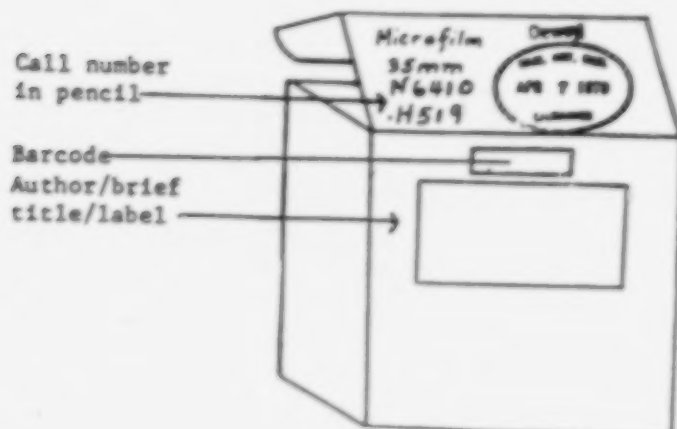
e. Monograph: Bound with

Two barcodes are placed in the center of the inside back cover, one inch from the top edge, with the barcode for the first item placed in the top position, and the barcode for the second item 1/2 inch below.

Placement (continued)

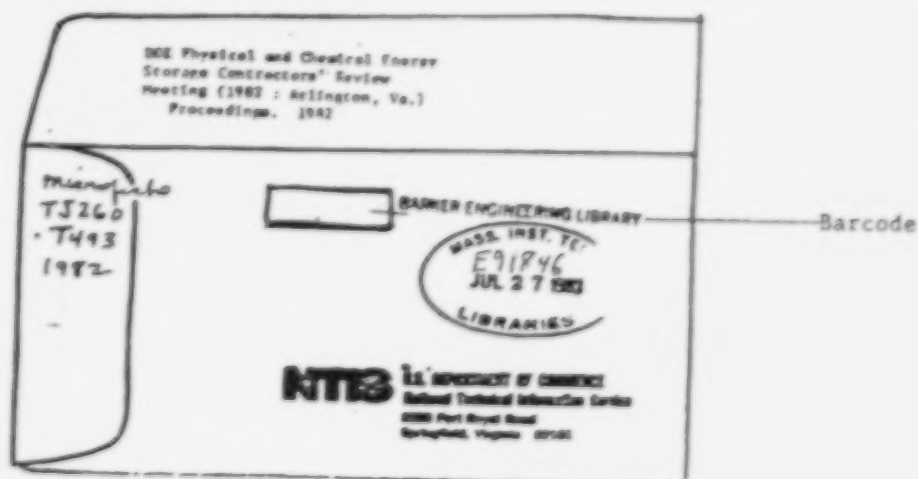
f. Monograph: Microfilm

Barcode is placed in the center of the front of the box, at least 1/2 inch from the top edge, above the author/title label. If there is not sufficient space, then the barcode is placed below the author/title label.



g. Monograph: Microfiche

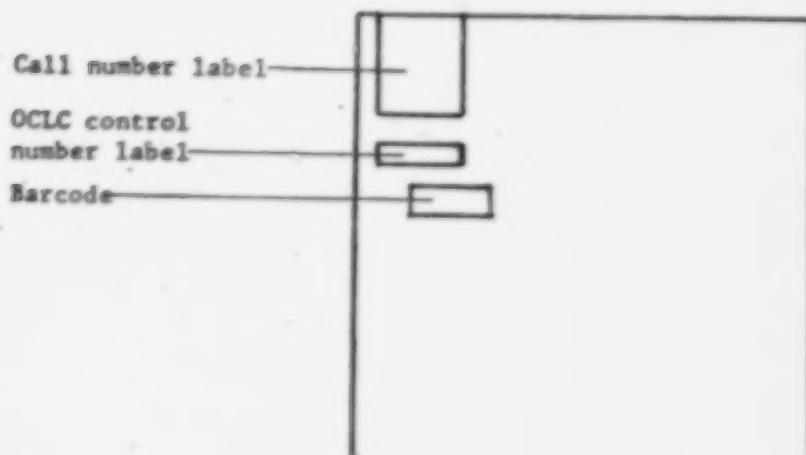
Barcode is placed in the center of the front of the first envelope, at least 1/2 inch from the top edge.



Placement (continued)

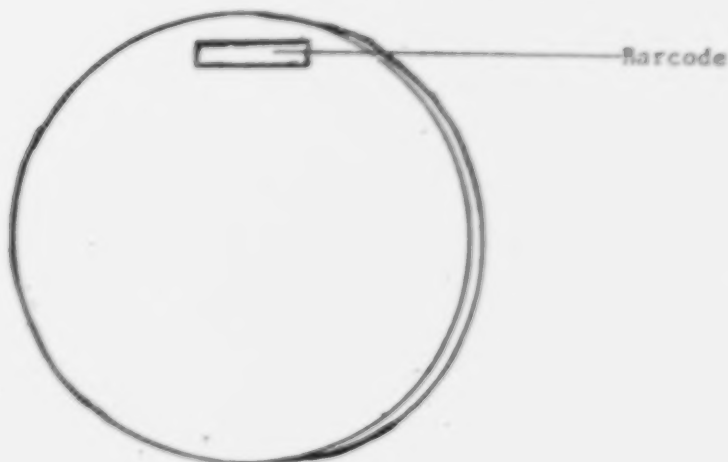
h. Sound recording

Barcode is placed on the front of the container (record cover), 1/2 inch below the call number, or OCLC control number, label and one inch from the left edge of the container. In the event that there are multiple records created for a single sound recording, or set of sound recordings, multiple barcodes are affixed to the container in a vertical arrangement.



i. Motion picture

Barcode is placed in the center of the front of the container (film can) one inch from the top edge.

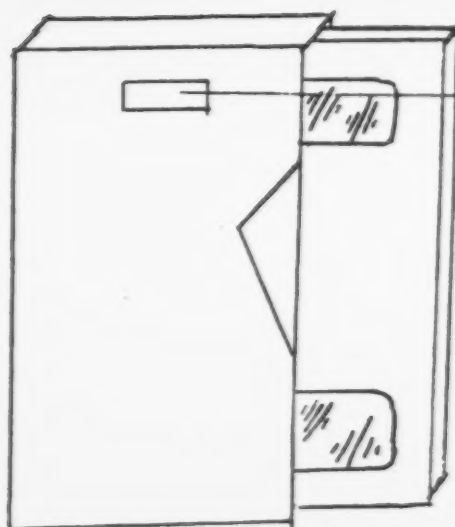


Placement (continued)

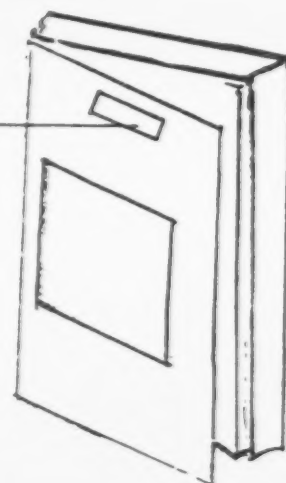
1. Videotape; audiotape

Barcode is placed in the center of the front of the container (cassette case) one inch from the top edge.

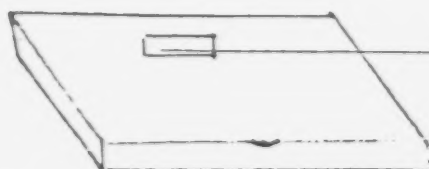
If there are multiple cassettes for a single title, individual barcodes are placed on each container.



Videotape in slipcase



Videotape in plastic box



Audiotape

PLACEMENT OF OCR LABELS ON CATALOGED MATERIALS

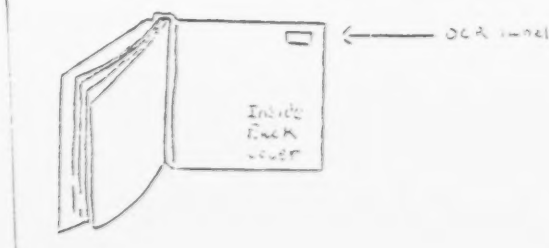
General instructions

One OCR label is required for each physical cataloged unit. This means each individual volume and copy. However, if several items are placed in a box, case, portfolio, etc., they are treated as one physical unit. This occurs most often with audiovisual materials. In these instances, one OCR label goes on the container. Each individual piece in the container does not get an OCR label.

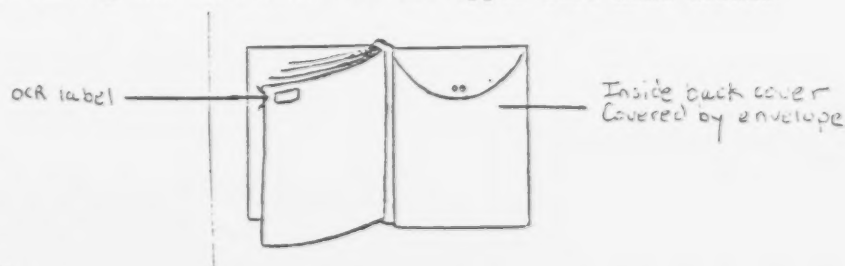
When an OCR label is applied to a slick surface or a surface to which the label will not stick, place a piece of Magic Mend (NOT SCOTCH) tape over the label, pressing down well to secure.

I. BOOKS, BOUND SERIALS

- A. Attach the OCR label inside the back cover 1" down from the top and 1" in from the side. Place here even though the end paper is covered by information, maps, etc. If however, this placement covers vital information, apply the label as close as possible to the designated spot.

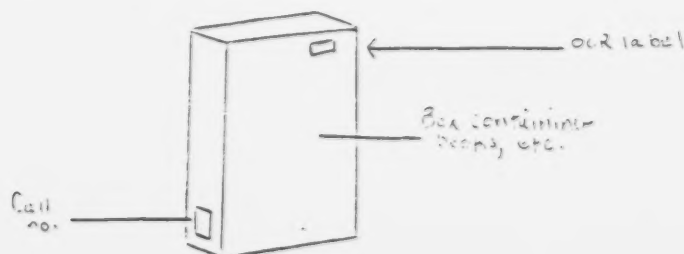


- B. If the back cover is impossible to use, e.g. (back cover has envelope or fold-out pasted over its entirety), place the label on the page facing the back cover in the upper left-hand corner



C. Boxed books

Attach the OCR label on the upper right-hand corner of the outside front cover of the box. Do not attach OCR labels to the individual books. Boxed sets usually only are found only in SPEC as the boxes for items going to the stacks are discarded.



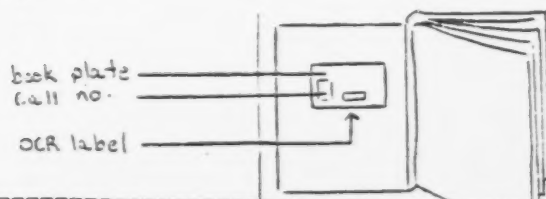
D. Books with accompanying materials

- a. Accompanying item is not separate physical unit but inserted in the book: Do not apply an OCR label to the inserted item.
- b. Accompanying item is separate physical unit: Apply OCR label to each physical unit, but not to individual pieces within it. For accompanying audiovisual materials see Section II.

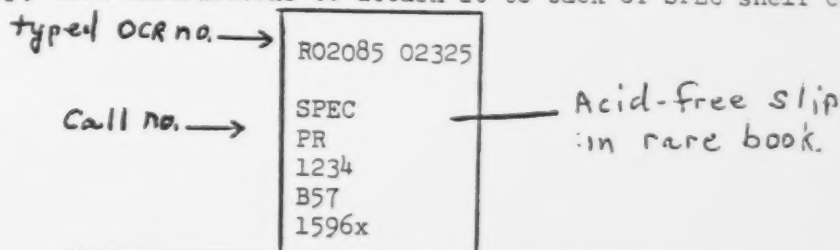
Accompanying materials that are to be shelved with a book in the stacks must be placed in a folder or box which can sit on the shelf as a separate unit. If the container is book-like in nature, e.g. pam binder, the OCR label is applied as if it were a book. If the container is a box, case, portfolio, etc. see CONTAINERS below.

E. SPEC

- a. Books and bound serials with call nos. attached in the regular manner: OCR labels are applied in the normal fashion.
- b. Books and bound serials with call nos. on book plates: OCR labels are placed on the lower right-hand corner of the book plate.

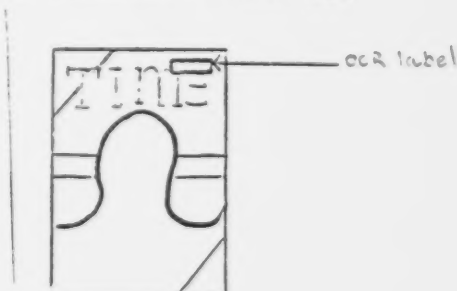


- c. Books and bound serials with call nos. on acid-free slips: OCR number is typed above the call no. on the acid-free slip. OCR label is clipped to OCLC Card Set Instructions/Authority Search slip, with instructions to attach it to back of SPEC shelf card.



F. Unbound serials

Attach OCR label on the upper right-hand corner of the front cover. Do not cover the volume no. or ISSN no.



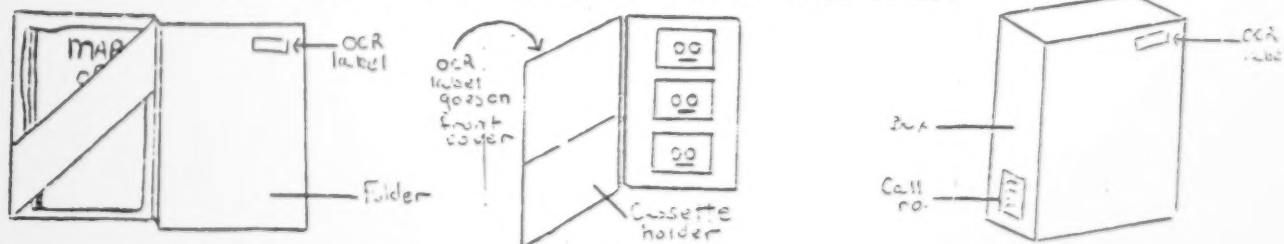
II. AUDIOVISUAL MATERIALS

Audiovisual materials are often received in containers. If possible, they should remain in these containers. Loose items and others not received in a usable container should be put in one. The options are as follows:

1. AV box (Available in Processing). Best for mixed media.
2. Portfolio or box made by Binding. Good for plates, pictures and other items for which AV boxes are not available.
3. Manila envelope bound into pam binder by Binding. Good for accompanying charts, maps and other fairly flat materials which can be folded to book size.
4. Cassette holders for 3-6 cassettes (available in Processing). Used only for cassettes accompanying books and cassettes with accompanying materials. For individual cassettes see CASSETTES below.
5. Cardboard tubes. Good for large items which are too big for a portfolio and should not be folded.

CONTAINERS

Folders and other book-like containers: Label as books. This does not include cassette holders which do not have space for an OCR label on their inside back cover. Boxes, cases, etc.: Place OCR label on the upper right-hand corner of the outside front cover.



The following instructions are for audiovisual materials which are handled as individual units and are not in larger containers. For materials in containers, see above description.

CARTRIDGE (8 TRACK & MOTION PICTURES)

If not in a box, find one or have one made.

CASSETTE

Must be placed in plastic cassette box. Place OCR label on the cassette itself on the same side as the call no. label and next to it.

CHARTS

OCR label is placed to the left or right of the call no. as space permits.

DIORAMAS

OCR label is placed to the right or left of the call no. label as space permits.

FLASHCARDS

If not in a box, find one or have one made.

FILMSLIP

Place in envelope and have it pam bound. Treat as a book.

FILMSTRIPS

OCR label is placed vertically on the cylindrical plastic container.

GAMES

If not in a box, find one or have one made.

GLOBES

OCR label is placed to the left or right of the call no. on the globe stand.

KITS & MULTIPLE MATERIALS

A single OCR label is used for all kit components. The label goes on the box. See instructions for containers above.

MACHINE-READABLE DATA FILE

If not in a box, find one or have one made. If in plastic case, label as a container.

MAPS

OCR label is placed to the left or right of the call no. as space permits. If map is folded, place in manila envelope and have it pam bound.

MICROCARD & MICROPRINT

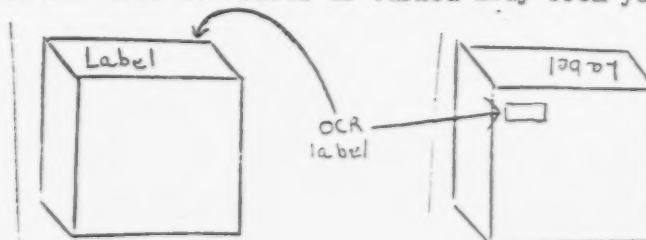
These do not receive OCR labels unless they are in cases. Then label as containers.

MICROFICHE

These do not receive OCR labels unless they are in cases. Then label as containers.

MICROFILM

If not in a box, find one or have one made. Since the call no. label is placed differently on these boxes, so is the OCR label. Place the OCR label on the back of the box in the upper left-hand corner when the call no. label is turned away from you.



MODELS

OCR label is placed to the left or right of the call no. label.

MOTION PICTURES

LOOPS

If not in some type of container or folder, find one or have one made.

REELS

If not in some type of container, find one or have one made.

PICTURES

OCR label is placed to the left or right of the call no. label. For individual items. For items in containers or folders, follow above directions for containers.

REEL-TO-REEL TAPE

If not in some type of container, find one or have one made.

REALIA

OCR label is placed to the left or right of the call no. label.

SLIDE

If not in some type of container, find or have one made.

TRANSPARENCY

Have individual transparencies placed in an envelope and pam bound.

VIDEORECORDINGS

If not in some type of container, find one or have one made.

11/81sh

OCR Numbers in RUSH books

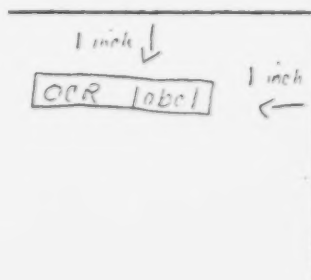
I. Hard bound books:

1. Attach OCR label to the upper right corner of the inside back cover (same page as book pocket).
2. Attach duplicate OCR label to the MOF or order card that is filed by date in the RUSH box. If there is no duplicate OCR number, transcribe the number in ink onto the MOF or order card, double checking accuracy.
3. If for some reason you cannot attach the OCR label in the usual place, attach it on the last blank page and instruct Marking and Labeling to attach the book pocket on the same page.

II. Paper-back books:

1. Paperback books that are to be bound before circulating will not have an OCR label attached by the cataloger. Fill out the RUSH binding request as usual, and on the MOF or order card write "Rush Binding", and file as usual in RUSH box.
2. Paperback books that will circulate unbound (such as when they are needed immediately by a patron at the circ. desk) will be cataloged, marked and labeled as if they were hard bound, following instructions in no. I. above. However, when attaching the OCR label to the inside back cover, leave about 1 inch from each edge to accommodate binding tape when the piece is eventually bound so that the OCR label is not covered up by the binding tape.

Example:



4/80 crl

Shelf Reading Instructions

SHELF READING INSTRUCTIONS: Below is your assignment. It should take about one hour. Please read the brief instructions on the Dewey and LC shelving systems carefully before starting. When finished with the shelf reading sign your name and date to this sheet and return to Circulation.

SHELVING BOOKS BY THE DEWEY DECIMAL SYSTEM:

Shelve numerically until a decimal point is reached: 910 911 912 913 etc.
Then shelve by the first number following the decimal, then by the second, third, etc.

910.1				910.3	5	5	6
910.1	7			910.3	6		
910.2				910.3	7	8	
910.2	9	2	4	910.3	8	0	9
910.2	9	4		910.4	4		
910.3				910.5			

The second line of the call number starts with a letter. These are shelved alphabetically, then by the first number, second, third as in the decimals above:

191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4	191.4
B6442	B6947	B695	B695c	B695c ₁	B695 ₂	C695cr	C695cr	C695cr	C695d
							1900	1976	

SHELVING BOOKS BY THE LIBRARY OF CONGRESS SYSTEM:

LC always starts with a letter or letters. Shelve alphabetically: A B BS BT H HN etc.
The next line will be numbers shelved in numerical order:

PR	PR	PR	PR	PR	PR	PR
6	61	64	649	650	651	651.2

The third line will start with a decimal and will be shelved like the decimals in the Dewey system:

H	H	H	H	H
64	64	64	64	64
→ .D49	.D5	.D66	.D7749	.D78

The fourth line will start with a letter and shelve alphabetically and then by the decimal numbers again:

H	H	H	H	H
64	64	64	64	64
.D49	.D49	.D49	.D49	.D49
→ C460	C47	C5	C5	C5
			1899	1899a

BEGINNING CALL #

ENDING CALL #

NAME: _____ 45 _____ DATE: _____

SHELFREADING PROCEDURES

A book improperly shelved is a lost book. A lost book might just as well not have been written. Worse, it is a promise unkept to users of the library, for it exists in our card catalog, but only as a man exists through having his name on a tombstone. Do not bury books. Shelf them properly.

William Kennedy
The Ink Truck

The purpose of shelfreading is to assure that books are not buried in the library but are in their proper order on their proper shelves. Books should be in order on a shelf from the left to the right. A set of shelves (known as a section) should be in order from the top to the bottom. Much like the page of a book, a section should be read from the upper left corner "across the line" to the right, down to the left of the next shelf and across to the right, and so forth to the bottom right of the section before proceeding to the upper left of the next "page". Each book must be in its proper place in order for the section to read properly. Often it is necessary to read between the lines of a book. Similarly, it is necessary to look behind a shelf of books to find any books that may have been pushed out of line or fallen from upper shelves. Thus may a full meaning of the shelf be obtained.

Before proceeding to your assigned area, please (re)acquaint yourself with the Library of Congress cataloguing system. This is an alphanumeric ordering system with, for the most part, an observable logic. In arranging library materials on the shelf, the call number is considered character by character beginning with the top line. The trick in this first line is to remember that the numbers are integers; that is, they are whole numbers. Images speak louder than words:

BS39	comes	QA76.7	comes	QA76.73	comes	QA76.8	comes	QA166	comes	QC612
	before		before		before		before		before	

The trick in following lines is to remember that any numbers following a decimal point and a letter are decimals; that is, they are fractions of whole numbers. Again:

.R213	comes	.S211	comes	.S22	comes	.S2569	comes	.S37	comes	.S6	comes	.T11
	before		before		before		before		before		before	

Follow this procedure for each line that begins with a decimal point and letter. If a year is indicated, books are shelved in chronological order (1980 comes before 1981, etc). Where two books have the same call number, but one has no year and the other does, the book with no date is shelved first, followed by all others of the same call number in chronological order. If a work is in more than one volume, shelve in numerical order (vol. 1, v. 2). If a work is part of a numbered series, shelve in numerical order. So:

QC612	comes	QC612	comes	QC612	comes	QC612	comes	QC612	comes	QC612	comes	QC612
.S4	before	.S4	before	.S4	before	.S4	before	.S4	before	.S4	before	.S8
.C6485		.C75		.I61		.I61		.I613		.I613		.G35
				vol. 3		v.3		1973		1979		
				c.2		c.6		v.1		pt.2		

Call numbers are most often found on the spine of the book. If it is not readable on the spine, remove the book from the shelf and check for the call number on the front of the book, the card pocket in the back, or on the verso of the title page. When removing item from a shelf, please do not pull on the top of the spine. Rather, push to the rear a few books on either side of the book in question and then clutch the book 'bout the spine. This helps to preserve the spinal integrity of materials.

SCIENCE DEWEY INVENTORY AND BAR CODING

Do 600's done before 500's.

Supervisors: Steve Presnell and Raymond Patterson

Start over there 7/8 with 4 teams:

Kristi Miller and Teresa Petitt

John Nyamiobo and Hensworth Weaver

Trisi Stevenson and Sandra Comer

Marnie Criley and Dan Caul

At Science we will need:

1. Shelves labeled for the categories in the procedure.
2. Secure place for staff to leave supplies.
3. Boxes to send materials to GTS.
4. Boxes for temporary use for "overflow cards" when our additions make the contents of a drawer outgrow the original space.
5. Numbering the drawers would be helpful, so that we can label both cards for missing titles and overflow cards by the number of the original drawer.

SUPPLIES:

Pencils, black pens, P-slips, bar code labels in "3's", paper-clips, blue cards, red filing flags to mark place in drawer, blue filing flags to serve as drawer dividers, blue jackets, shelf place markers, boxes for "overflow" cards, scotch tape, and book trucks. Supervisors need stick-on labels for drawers, and search slips.

1. Shelf check:

- 1.1 Each team consists of two people.
- 1.2 Coordinator assigns shelf list drawers to be inventoried.
- 1.3 Supervisor pulls shelf list drawers placing a red filing flag in front of each drawer as it is worked with for the first time. Place a blue filing flag at the end of each drawer to serve as a divider. A note in the gap in the shelf list indicates the team to which it is assigned and the date and time.
- 1.4 Each team loads a truck with supplies before receiving a shelf list drawer. At no time are the shelf drawers left unattended in the open stack area.
- 1.5 Inventory team takes truck to proper area of stacks.
- 1.6 The red filing flag is used to hold place in shelf list. It is behind the last card reviewed and a card which has been removed for bar coding is returned to the drawer immediately in front of the special flag. Until a drawer has been completed, this flag marks the point to which the shelf list has been read.
- 1.7 Place shelf marker at right of the last volume which has been barcoded. This should have the same call number as the shelf card immediately in front of the red flag in the shelf list.
- 1.8 One person reads from shelf list. The other checks the volumes on the shelves. (They should exchange places at intervals to avoid fatigue, since the "reader" can sit down while working.)
- 1.9 A "q" in front of a call number, "oversize" above call number, or a jacket saying "oversize" indicates an oversize volume which should be shelved in a different area. Place a blue jacket on the card, move the card in front of red flag and proceed to the next card.

- 1.10 Each card has a statement "serial shelf", accession numbers or a note "Shelf over" at the left hand margin. (The "Shelf over" note indicates that there is additional information on the back of the card.) Serial titles have "check cards" behind the catalog cards.
- 1.11 The reader pulls the shelf card immediately behind the red flag and reads out the call number, and the checker looks on the shelf for the book with that number.
- 1.12 If a card has one accession number and the item is on the shelf:
 - (1) attach two labels from a set of three bar code labels to book. One goes inside front cover and one on the outside of the back cover. (See sample) If all holdings are unbound, pencil "unb." in upper right hand corner of shelf card and do not apply labels.
 - (2) Attach third bar code label to back of the shelf card.
 - (3) Return book to shelf to the left of the shelf marker. red flag.
 - (5) Proceed to next card.
- 1.13 If the card has one accession number and book is not on the shelf:
 - (1) Remove the card from the shelf list and place it at rear of cards behind the blue flag.
 - (2) Proceed to the next card.
- 1.14 If the card has more than one accession number, and there are volumes on the shelf:
 - (1) Apply two bar code labels from a set of three to each volume. Do not barcode unbounds. If all holdings in the call number are unbound write "unb." in upper right hand corner of shelf card. If holdings are mixed between bound and unbound, bar code only the bound volumes and do not make any note of the unbound portions.
 - (2) If it is possible to do so without covering other information, add third bar code label of each set to the back of the shelf card, adding copy and/or vol. number of item to which it was applied to the left of each label. If there is not room on the back of the card, write the call number in the upper left hand corner of a blue card and place the third labels and the related volume or copy numbers there. (See sample)
 - (3) Return the volumes to the shelf to the left of the divider.
 - (4) Return the shelf card, with any related blue card(s) behind it, to the shelf list immediately in front of the special flag.
 - (5) Proceed to next card.
- 1.15 If a card has more than one accession number, and there is no item on the shelf:
 - (1) Remove the card from the shelf list and place it at rear of cards behind the blue flag.
 - (2) Proceed to the next card.
- 1.16 If the shelf card represents a serial, and there are holdings on shelf:
 - (1) Move the card(s) to the front off the red marker . DO NOT BAR CODE VOLUMES.
 - (2) Move the shelf divider to the right of the volumes.
 - (3) Proceed to next card.
- 1.17 If the cards represent a serial and there are no holdings on shelf:
 - (1) Remove the card(s) from the shelf list and place at rear of the cards behind the blue flag.
 - (2) Proceed to next card.
- 1.18 At any time that the next volume to the right of the shelf marker does not have the same call number as the next card:

- (1) If the volume is shelved in the proper location, remove it from the shelf and place on truck in stack labeled: VOLS. WITHOUT SHELF CARDS.
 - (2) If volume is shelved incorrectly, place it on the truck in stack labeled: SHELVES IN PROPER LOCATION.
 - (3) Proceed to next card.
 - 1.19 At end of session in stacks, remove shelf marker.
 - 1.20 Remove blue divider and cards behind it. Rubber band the cards together and place in the drawer for missing titles. Place packs of cards in call number sequence or drawer number sequence.
 - 1.21 If there are "overflow" cards, place them in a box for Science coordinator to sort into a drawer.
 - 1.22 Return drawer to proper place in shelf list, amending the label to show: "Inventory in Progress" or "Inventory Complete." Date and initial the label.
 - 1.23 Place volumes without shelf cards on a designated shelf for follow-up. Shelf labeled: DEWEY INVENTORY BOOKS--NO MATCHING SHELF-LIST.
 - 1.24 Place mis-shelved volumes on designated shelf to be sorted and checked against any completed drawers before re-shelving. Shelf labeled: MIS-SHELVED DEWEY INVENTORY BOOKS.
-
2. Follow-up on volumes which were shelved out of place:
 - 2.1 Send any volumes belonging in other libraries to Monograph Maintenance to be returned to the proper library.
 - 2.2 Place other volumes on receiving shelves for re-shelving.
-
3. Follow-up on volumes without shelf cards:
 - 3.1 Check shelf list to be sure that shelf card was not overlooked. If a shelf card is located, handle as in original barcoding. If the shelf card is located in the drawer for missing titles, move it back to its proper place in the shelf list after barcoding.
 - 3.2 If no shelf card is located:
 - (1) Write an "O" on the Dewey shelf list line of the search slip.
 - (2) Take the volume to the public catalog and look under the name of the author (MAIN ENTRY):
 - (1) If a card is found for the same book (including publisher and date of publication), check accession number on card card against the item at hand. If the card is for a serial there will not be accession numbers in the catalog.
 - (2) If there is an exact match, including call number, check the PC author card line on the search slip and pull the public catalog card.
 - (3) Clip card and slip in the book and place them in stack to photocopy the card(s) for the shelf list. PHOTOCOPY THE MAIN ENTRY CARD(S) TO USE AS A SHELF LIST, AND ADD BARCODE LABELS TO VOLUMES AND SUBSTITUTE SHELF CARD. FILE SHELF CARD IN THE SHELF DRAWER, RETURN BOOK TO RECEIVING SHELVES, AND GIVE MAIN ENTRY CARD(S) TO SCIENCE STAFF TO BE REFILED.
 - (4) If there is a probable match, pull the PC card and add a "?" in the notes space on the search slip. Clip slip and card in volume and place them on shelf for Science staff to review.

- (5) If there is a match for the cataloging, but there is a different Dewey number, place a check on the PC author card line and write down the Dewey call number. Look for a Dewey shelf card with that number. If there is a Dewey shelf card, bar code volume and shelf card. IF THE ITEM IS PART OF A SERIAL DO NOT BARCODE THE VOLUME. Write to correct call number on the search slip for relabeling. Give volume and slip to Marshall for relabeling. Refile cards in shelf list.
 - (6) If there is a match for the cataloging with an LC call number, record the LC call number; clip slip in volume and place in box to send to PGE.
 - (7) If there is no exact match, place "0" on PC author card line, and set on shelf for Science staff to review. Do not pull cards.
- 3.3 If no entry is located under the author, look under the title of the book and to see if there is a card for the book. Follow same steps as for cards located under author.
- 3.4 If no entry is located under either author or title, clip the search slip in the volume and place them in designated location for Science staff to review. NOTE TO SCIENCE STAFF: If the item is discarded, there may records in GTS. Box volumes no longer wanted and label them to indicate their status for PGE in Monograph Maintenance. If the decision is made to have the item cataloged, it will be handled as a new gift, and sent to GTS to be processed. GTS will need to check these against Central shelf list and or catalog to be sure that the problem was not caused by missing sets of cards at Science. Separate volumes into those which are wanted for Science and those which Science is willing to have withdrawn. Box these separately and send for Mark and Stephen Angel to look up in Central PC and shelf list. If they find record in Central they should pull the shelf card and give volume(s) and shelf card to PGE. If they do not find records in Central the volumes to be withdrawn may be returned to Science for disposal (?) and those to be kept will be added to the materials to give to Gary to put in processing stream. Be sure that the slips indicate that Science is the destination.
- 4. Accession number problems:
 - 4.1 The accession number is currently the unique identifier for a specific volume. The bar code number will assume this function in the ACORN system. In matching shelf cards and volumes, discrepancies among the accession numbers on shelf cards, book plates, and those stamped inside the volume represent a potential problem.
 - 4.2 If there is a slight variation between accession numbers on book plates and on cards, check the stamped accession number and see whether it matches the one on the card. If it does, correct the number on the book plate, with a black pen, and bar code the book and card.
 - 4.3 If there is a major variation, but the item matches the call number and cataloging information, apply bar code labels to the book and the card - carefully identifying the volume or copy to which the label was applied by writing the the number(s) and the accession number next to the bar code label.

- 4.4 If there is some question as to whether the item in hand really matches the shelf card in terms of call number or cataloging information, place the volume on the accession number problem shelf, with a note explaining the problem. Science staff will need to review these.
- 4.5 In identifying volumes without shelf cards, the proper matching of accession numbers confirms the match. If there is doubt that the volume fits Dewey cards which are located fill the search slip in with "?" in the PC author and or title line, pull the PC card, clip slip and card in volume, and place them in location designated by Science staff.
- 4.6 If there is doubt about a match for an LC public catalog card, fill in the search slip and pull the LC shelf list card to clip into the book. Place the book on the PC snag shelf. Science staff will need to review these and if the item is determined to fit the LC cataloging, and they wish to have it retained, they will make a note to add it to the shelf list for Science, providing the LC call number, and send the volume to Monograph Maintenance. The Science staff will file the shelf card in their LC shelf list. If the item does not match existing cataloging, and the Science staff wishes to have it added to the collection, it should be sent to GTS to be put in process as a new gift. These should be sent with those in 3.4 to clear any Central records.

STEP 1

Check assigned section of the list against books in the stacks.

1. In general, ignore books for which there is no call number on the list.
Exception--see 3c.
2. Put "OK" in front of the call no. for those barcodes which have no problems.
(i.e. book one shelf, book matches barcode information on the list)
3. For barcodes with problems, briefly state the problem on the list next to the call no. The following notations are suggested:
 - a. NOS-- use when there is nothing on the shelf for the call no. on the list
 - b. MV--use for any multivolume work (serial or set) represented by a call no. on the list.
 - c. Mislabeled-- use for something that strongly appears to be a mislabeled book.
(Call no. does not exactly match but brief title does) Note the call no. of the book label on the list next to the notation.
 - d. 2nd copy, etc. on shelf-- usr for multiple copies where there is not a separate barcode listed for each copy.
 - e. If you find 2 or more identical call nos. on the list use the first barcode listed for the first copy, the 2nd one for the 2nd copy, etc. If there are fewer copies on the shelf than there are identical call nos. listed, put NOS next to the listing for which there is not additional copy on the shelves.

STEP 2

Check Circulation for all NOS call numbers to see if the title is charged out or on the sorting shelves. If it is charged out or on the sorting shelves, put "Circ.-Yes" on the list. If it is not charged out or on sorting shelves do not put anything on the list. NOTE: For items that could be duplicate barcodes--check the shelflist before going to Circulation.

STEP 3

Check remaining NOS titles and other applicable problems against the shelflist to see if the problem can be resolved. On the list put SL.- if the shelflist agrees with the barcode information on the list. If the shelflist does not agree, put SL.- (state the difference), e.g. SL.-withdrawn.

In checking the shelflist it might be best to skip the multivolume works (MV) at this time. The fact that they are multivolume may be all that is needed now.

UNIVERSITY OF KENTUCKY LIBRARIES
Sample Listing of Barcode Data

Barcode No.	Call No.	Brief title	Location
2500007289	OK 922.03405br	Babio; a twelfth century profane c	KING
250000374R	ES2.2 So66ote NoS	King Oedipus,	KING
250000264P	OK 91.6208 Ir4, v.48 MV	T?oruigneacht Dhiarmada agus Ghr?a	KING
2500007243	OK 91.73 An225wh	When the king loses his head and ot	KING
250000840P	OK 92.4 Sh735zka	From Tyre to Jerusalem; the literar	KING
250000659H	NO 922.4009 H1396m NoS	Modern Hebrew literature, from the	KING
250000659X	OK 92.709 H1396m	Modern Hebrew literature, from the	KING
250000269U	OK 910 St234?x 1969	London essays in geography; Rodwell	KING
250000323L	OK 910.0317496 D8525d	Darkwater; voices from within the	KING
250000500I	OK 913.73 P541, v.6 MV	Investigations in southwest Yukon.	KING
250000746U	NO 914.2003 G2925c NoS	Commercial gazetteer of Great Brit	KING
250000895Z	OK 914.303 32413a	American convictions; cycles of pub	KING
250000459V	OK 914.60481 L5135a	As I walked out one midsummer morn	KING
250000299X	OK 917.3 38945o	Old England and New England, in a	KING
250000162M	917.303 I4325 MV	This fabulous century.	KING
250000537S	OK 917.30391 83145c	The creative spirit; an inquiry int	KING
250000170L	OK 917.309749S W9356t	12 million black voices.	KING
250000127N	NO 917.403208 E3815e NoS	Essays in American history.	KING
250000825S	OK 919.5 H2795n	New Guinea, problems & prospects.	KING
250000343N	NO 937.06 D7595? NoS	The late Roman Empire.	KING
250000210G	OK 939.05 C8155t	Thucydides Mythistoricus.	KING
250000946H	OK 942.05 Es76s	Essex the rebel; the life of Rober	KING
250000947X	942.05 Es76s NoS	Essex the rebel; the life of Rober	KING
250000948Y	942.05 Es76s NoS	Essex the rebel; the life of Rober	KING
250000512R	NO 942.073 Eh89114pS	The younger Pitt.	KING
250000329Q	OK 942.083 J726 MV	Whitehall diary;	KING
250000487W	OK 943.08 W3388mi	The iron cage; an historical interp	KING
250000430K	OK 943.704 H2575c	Czechoslovakia from the New World.	KING
250000334N	NO 944.082 H3945s NoS	She who pays.	KING
250000557U	OK 944.1023 P1665s	The scourge of the clergy; Peter of	KING
250000330J	OK 951.008 C4413, no.4 MV	Peking and the New Left: at home a	KING
250000851R	OK 951.01 Su375b	The founding of the T?ang dynasty;	KING
250000666X	OK 951.042 93996c MV	China shakes the world.	KING
250000452D	NO 952 53155m NoS - Circ Yes	Milestones in Japanese history.	KING

UNIVERSITY OF KENTUCKY LIBRARIES
RESULTS OF FIRST AND SECOND PRE-TESTS

Number of Items checked 975
Multi-volume (MV) 39
Not on shelf (NOS) 256
Number of Items on shelves (OK) 710

39 (MV) + 256 (NOS) = 295 = 30.25% that could not be labeled initially

MV 4.00%
NOS 26.25%

Breakdown of NOS

Initial NOS = 256

	LC	Dewey	Total	% of Total Items	% of NOS	
Checked out	25	17	42	4.31%	16.41%	48
Lost	6		6	.62%	2.34%	
Duplicate labels	43	6	49	5.03%	19.14%	
No shelf list card	7	4	11	1.13%	4.30%	
Withdrawn	1	3	4	.41%	1.56%	
Located in Branches	1	3	4	.41%	1.56%	
Anal	1	8	9	.92%	3.52%	
Transferred, left in Dewey		5	5	.51%	1.95%	
Transferred, reclassified in LC		8	8	.82%	3.13%	
Incorrect call numbers		16	16	1.64%	6.25%	
Title listed twice, different bar codes		1	1	.10%	.39%	
Reclassified in LC		2	2	.20%	.78%	
1 bar code, 2 copies on shelf		12	12	1.23%	4.69%	
Media Lab		1	1	.10%	.39%	
Not checked out, shelf list ok	53	33	86	3.38%	12.89%	

Time = approximately 11 hours (checking stacks and Circulation only)

ESTIMATE: 1 label per minute

7.1

2/1/82 (NHM)

PER ITEM BAR CODE LABELING AND DATA ENTRY COSTS

	<u>Cost per item</u> \$	<u>Cost per year</u> \$
<u>Retrospective (Circulation Dept) (175,000 items/year)</u>		
Labels (2 labels/item; \$2.85/1000 labels)	.0057	998
Overlabels (1 label/item; \$6.52/1000 overlabels)	.0065	1,138
Printer ribbons (\$8.66/ribbon; 2500 items(2 labels)/ribbon)	.0034	525
Student Staff - data entry, affixing labels, revision @ \$3.50/hr	.119	21,000
Printer run @ \$3.50/hr	.010	1,820
Regular Staff - (2) LSA2's @ \$6.00/hr	.143	24,960
(1) 75% Project Supervisor @ \$6.60/hr	.059	10,296
ADP Computer charges for data entry	.077	13,475
<u>TOTAL</u>	<u>.424</u>	<u>74,212</u>
<u>New Acquisitions (Technical Services Dept) (50,000 items/yr)</u>		
Labels (2 labels/item; \$2.85/1000 labels)	.0057	285
Overlabels (1 label/item; \$6.52/1000 overlabels)	.0065	325
Printer ribbons (\$8.66/ribbon; 2500 items/ribbon)	.0034	170
Staff Costs: (1) LSA4 @ \$6.62/hr; 1 student @ \$3.50/hr (apply bar code labels, clear strip and OCLC entry)	.093	4,650
<u>TOTAL</u>	<u>.109</u>	<u>5,430</u>



OMS

System and Procedures Exchange Center

Projects

PROJECT STAFFING

It has been our experience that a large barcode labeling project being done in a short period of time requires close supervision to insure a high degree of accuracy. We have found the optimum span of control is 8 to 10 workers, so there should be one team leader for every ten workers, and one project co-ordinator for every ten team leaders.

Workers

The job of the workers (labelers) has been described in detail earlier in this report. We have found that individuals working alone are more efficient than people working in pairs on a labeling project of this type. It is also important that each worker should have at least a ten minute break after every continuous two hours of labeling.

Team Leaders

The team leaders are key people to a smooth, efficient operation. Prior to the labeling project they break their location into individual jobs and set up the job packets and labels so they can distribute them in the most efficient manner.

The day(s) of the labeling project they must check the members of their team in the beginning of each session, assign working locations, distribute the materials for each job, and collect all materials at the end of each session. They also call all break and lunch times, keep a log of which jobs are completed, and record which jobs need to be re-checked due to special problems.

During the labeling project team leaders spot check each team member's work for accuracy, take note of team member's work habits and help the co-ordinators determine if any team member must be let go. They are also the first line of authority in problem solving for individual workers. As such they will make decisions concerning:

- 1) Titles of barcode labels and book spine titles which are not exactly the same.
- 2) Call numbers on barcode labels being slightly different from the call number on the book.
- 3) Call number sequence out of order on the shelves -- whether to continue the job with a less degree of accuracy and at a slower pace, or whether to have the area shelf read again before continuing the labeling process.
- 4) Discrepancies in policies about multi copies and multi volumes which do not fit what actually appears on the shelves.
- 5) Whether or not an item should be pulled for repair or labeled and left on the shelves.

Co-ordinators

Co-ordinators are responsible for planning the overall project for each project (library) into the best workable sections for each team. They must determine the number of teams needed to get the work finished in the required time and the amount of supplies needed for the teams. Policies concerning duplicate labels, how to handle books pulled for repair, how to handle multi volumes (copies) without barcode labels, and how to handle assigned barcode labels left over at the end of each job are a few of the co-ordinators concerns. They must establish working schedules, plan around logistic problems, and determine how to finish the labeling project (See Step Two For All Libraries).

It is the responsibility of the co-ordinator to train the team leaders. This session can include a sample labeling by team leaders and should include the method of handling all anticipated problems on the job. The team leaders will need information on how to set up individual jobs and on the layout of their job areas.

During the actual labeling project the co-ordinators are the final authority on solving problems which may arise on the job and for which no policy was established. They also help clarify variations on the problems listed under the "Team Leader" section of this report. During the project new policies will emerge out of the actual "hands-on" process and the co-ordinator will insure these are given to all team leaders. They will assist any team leader who has personnel problems and let go any worker not working up to the required standard. In short, the co-ordinator will find the best method of doing the project and then insure that maximum efficiency is maintained.

Rutgers' Needs

Since the projected plans are to label the largest (Alexander) library first, it may be advantageous to have the staff who will be project co-ordinators in the branch libraries act as team leaders in the Alexander project. If so, it would be better to keep these staff members as team leaders for the duration of the Alexander projects to insure continuity within the different teams. If this is not possible, outside, experienced co-ordinators could be brought into each branch library for the pre-project work and for the first day of the labeling project to work along with the staff member from that library designated as co-ordinator. This staff member could then assume full responsibility for the second and remaining days of the project.

Given the staffing available and the average productivity of 100 labels per person per hour, the actual labeling of any library's collection (step 1 of the procedure) should require less than 2½ days.

Personnel Budget

Discussion then turned to the personnel effort required. The Library was prepared to absorb the additional workload of the ongoing system with current staff. But 1.3 million bar code labels had to be affixed to the circulating books before the system could operate, because 1.3 million item records containing the preassigned bar code numbers would already be created. Average estimates from other libraries who had bar coded their collections ranged from sixty to seventy-five bar-codes, per hour, per person. Most libraries with bar code systems did not have circulation records in machine-readable form before automating circulation so they applied "dumb" labels to books and at the point of check out, created the item record and noted its bar code number. As far as we could ascertain no library had had to place pre-assigned bar codes on collections of more than over 300,000 volumes.

The pre-assigned labels could not be simply slapped on books in any order, the way dumb labels could be. Staff would have to examine the call number on the label, and match it to the call number of the book on the shelf, before placing it inside. The possibility of similar call numbers, misshelved books, books not on the shelves, and mismarked spines would increase the need for attention to detail in applying pre-assigned labels.

After simulating a rematching procedure, CIPCSIC recommended that sixty labels per hour per person be used to estimate the personnel time needed to bar code the collection, or at least 25,000 person hours to do the job. The options included having the Library staff do the job (to the detriment of other library assignments); hiring hourly help to do it; or a combination of the two.

It was calculated that the entire full-time library staff, including the administration, devoted an hour a day to bar coding, the project would take eight months. Closing the Library for the duration of the project was not a viable option. It was humanly impossible for any person to watch bar codes to books, with any degree of accuracy, for eight hours a day. Devoting a half day of each staff member's time every day to the project would result in a two month project with library services so hampered that the building would have to be closed. The Associate Provost made it clear that closing the Library for even a week was unacceptable to the faculty.

Bar coding the collection with students working at minimum wage would cost almost \$100,000 including benefits. The figure could be reduced if work study students could be hired, because their salaries were subsidized eighty percent by federal funds. The Associate Provost said he would see what he could do to look into the possibilities of additional University funds for the needed equipment, and the availability of student and work study funds.

Funding the Bar Code Personnel

YALE UNIVERSITY LIBRARY

CROSS CAMPUS LIBRARY

February 12, 1980

TO: Bella

FROM: Sue

RE: Job descriptions for CCL conversion staff

Alan Hagyard and I made the following lists of duties and qualifications for the three levels of jobs we envisioned for the conversion project. The titles come from the University's C & T salary chart.

Data Control Coordinator (6 months, full-time)

1. Reports to Principal Public Services Librarian, CCL
2. Supervises and trains eight Data Entry Operators and one Lead Data Entry Operator
3. Responsible for day to day administration of CCL book conversion project including scheduling staff, evaluating quality of work in progress, making recommendations for termination, administrative paper work
4. Answers questions concerning bibliographic data to be entered
5. Participates in planning procedures and writing operators' guides
6. At times may perform data entry and/or proofread and edit work done by staff
7. Qualifications:
 - a. minimum 35 wpm typing
 - b. 1-2 years data entry experience, preferably with CRT use
 - c. experience with library card catalogs preferred
 - d. supervisory experience preferred

Lead Data Entry Operator (6 months, full-time)

1. Reports to Data Control Coordinator for CCL book conversion project
2. Participates in training and supervising eight Data Entry Operators
3. In absence of the Data Control Coordinator, responsible for day to day administration of CCL book conversion project
4. May participate in planning procedures and writing operators guides

5. Responsible for proofreading and editing work done by Data Entry Operators
6. At times may perform data entry
7. Qualifications:
 - a. minimum 35 wpm typing
 - b. 1-2 years data entry experience, preferably with CRT use
 - c. experience with library card catalogs preferred
 - d. supervisory experience preferred

Data Entry Operator (full - or part-time, 6 months)

1. Reports to Lead Data Entry Operator and/or Data Control Coordinator for CCL book conversion project
2. Removes books and other materials from regular shelving areas, brings them to the conversion room, returns them after processing and reshelves them.
3. Affixes barcode labels and mylar cover to library materials
4. Determines if a record exists in the data base for an item; enters or edits bibliographic data
5. Records information for missing items
6. Searches circulation and binding files to locate missing items.
7. Searches shelves to locate missing items
8. At times may perform proofreading and editing tasks
9. Qualifications:
 - a. minimum 35 wpm typing
 - b. some data entry experience, preferably with CRT use
 - c. experience with library card catalogs preferable
 - d. good physical condition

cc: Alan Hagyard
John Harrison
Frederick Martz
SEC:rs

CONVERSION

Yale University

BARCODE LABELS

- INITIAL SUPPLY OF BARCODE LABELS WILL BE PURCHASED FROM GEAC AT A COST OF \$32 PER 1000.
- INITIAL ORDER WILL BE FOR 500,000 LABELS = \$16,000.
- POSSIBILITY EXISTS OF PRODUCING FUTURE SUPPLIES OF BARCODES ON THE YALE ID CENTER'S PRINTER AT A COST OF APPROXIMATELY \$20 PER 1000.

CCL CONVERSION

(1) STAFF REQUIREMENTS

- SUPERVISOR - FULL TIME, 6 MONTH POSITION
 - EQUIVALENT TO YALE JOB # 544 / DATA CONTROL COORDINATOR
- ASSISTANT SUPERVISOR / PROOFREADER / DATA ENTRY OPERATOR
 - FULL TIME, 6 MONTH POSITION
 - YALE JOB # 547 / DATA CONTROL CLERK, OR
 - YALE JOB # 567 / LEAD DATA ENTRY OPERATOR
- DATA ENTRY OPERATORS
 - 8 FTE FOR 6 MONTHS
 - YALE JOB # 566 / DATA ENTRY OPERATOR
 - MIX OF HIRING POSSIBILITIES
 - FULL TIME - UP TO 6 MONTHS
 - PART TIME - UP TO 6 MONTHS
 - YALE TEMPS
 - STUDENTS
 - OUTSIDE TEMPS (ONLY UNDER EXTREME CONDITIONS)

(2) STAFF COSTS

	BASE SALARY		MID-RANGE	
	MONTHLY	6 MONTHS	MONTHLY	6 MONTHS
SUPERVISOR	\$ 659	\$ 3955	\$ 792	\$ 4752
ASST SUPER.	\$ 623	\$ 3740	\$ 742	\$ 4455
8 FTE DATA ENTRY	<u>\$3842</u>	<u>\$23052</u>	<u>\$4538</u>	<u>\$27231</u>
	\$5124	\$30747	\$6073	\$36438
CONTINGENCY (10%)	<u>\$ 500</u>	<u>\$ 3000</u>	<u>\$ 600</u>	<u>\$ 3600</u>
TOTAL	\$5624	\$33747	\$6673	\$40038

STAFFING

Staffing for the Bar Code Project consists of a project director, various library staff members devoting a portion of their work day to the project, and student employees. The project director has overall responsibility including hiring and training students, preparing a procedure manual, scheduling of students and staff, monitoring progress and preparing reports.

The library staff working on the project will supervise the student teams, reporting directly to the project director. This staff will be responsible for maintaining a daily log sheet. They will also ensure that each team has the necessary equipment and supplies at the start of each shift and will be available to answer any questions.

The actual attachment of bar code labels to material on the shelf and to shelf cards will be done by student employees working in teams of two. They will work in two hour shifts. From January to April there were two two-hour shifts each day from Monday to Friday. Starting May 7 there will be three two-hour shifts each day. At the start of each shift each team will be provided with a book truck, a drawer from the shelf list, and necessary supplies. Supplies will include bar code labels, pen and pencils, cleaning cloths, plastic card protectors, streamers for problem books, waste cards, and a statistics sheet.

RESPONSIBILITIES OF SUPERVISORS

Supervise students and be available to answer questions.

Maintain daily log sheet.

Check that students show up for their scheduled hours and that they are on time. Inform Project Director of any problems.

Make sure that each team has the necessary equipment and supplies at the start of each shift. This may be accomplished by having the students empty trash bags and replenish supplies at the end of each shift.

Remove books with streamers from book trucks and return them to Technical Processing.

As time permits while supervising, read shelves in areas that have not been labeled.

Barcoding Instructions

Washington State University
(smart barcodes)

1. PUT EACH SHELF IN CALL NUMBER ORDER BEFORE BARCODING.
2. Locate the accession number in the book.
 - a. On the pocket inside the back cover
 - b. Usually 1 or 2 pages after the title page, written at the bottom.
3. Compare the accession numbers in the book and on the workform. DO NOT use the accession number on the circulation card.
4. Barcode the book only if the accession numbers match.
 - a. Put the barcode label on the same page as the card and pocket, one inch below the top of the book and centered. DO NOT put the label on upsidedown or crooked; be sure the plastic label is centered over the barcode label.
 - b. Bring back the book and workform if the call numbers or accession do not match, if there is an extra copy of the book on the shelf, if the book is already barcoded, or if the clear plastic label is wrinkled.
5. Barcode the workform.
 - a. If there are 3 accession numbers or less, put the labels beside the corresponding accession numbers on the workform. Draw arrows to show which accession number matches which label.
 - b. If there are more than 3 accession numbers, put the labels on the back of the workform. Write the volume and copy information beside the labels. DO NOT overlap the labels or put them on the backs of the xeroxed shelflist copies stapled to the front of the form.
6. COMPARE THE BARCODE LABELS by reading the last two digits of the label number.
7. Record the barcode labels used on the statistics sheet. Record the first barcode label used and the last barcode label used. THE FIRST LABEL LEFT ON THE REEL AFTER BARCODING IS NOT THE LAST NUMBER USED.

January 1986

BARCODING INSTRUCTIONS

1. PRELIMINARY: You will pick up a 3x5 card each morning which will have your team number and the name of your partner for the day. If you have not already picked up this card, please do so at the end of the training session. If you do not know your partner go to the designated location to meet him/her. Once you have met your partner, go to the Circulation Desk to pick up your barcoding packet. There will be one packet for each team. In this packet will be:
 1. Yellow legal pad to be used as a hard writing surface.
 2. A pencil.
 3. An envelope of 10 sheets of bar codes.
 4. Forms for noting books not on shelf and other problems (six to a page).
2. FORM: The call number on the barcode must match the call number on the book exactly. When you do not have an exact match, the form should be filled out. Each time you fill out this form be sure to fill in the full call no. as listed on the barcode or on the spine of the volume, and the page no. of the barcodes found in the upper left corner of each sheet. This should be filled out each time one of the following occurs:
 1. Book is not on shelf.
 2. You have several volumes but only one barcode.
 3. You have more than one barcode but only one volume.
(This does not include barcodes with red dots.)
 4. A barcode for which there is a LOST BOOK MARKER.
 5. A book on the shelf but no barcode.
 6. Any other type of problem you encounter where the barcode cannot be applied.
 7. If you apply a barcode to the wrong volume by mistake, check APPLIED BY MISTAKE - but do not remove volume from the shelf.

We have found instances of duplicate barcodes. We have noted these by a red dot in the upper left corner of the barcode. DO NOT put these barcodes on; just leave them on the sheet and DO NOT make out the form.
3. WHERE TO APPLY THE BARCODES: Place the barcode above the pocket on the inside cover of the book. For those items with no pocket place barcode on the top center of the inside back cover. For items in boxes, folders, etc., place barcode on only if there is one item in the container. Ignore all stamps (e.g. "Does not circulate") and binding problems.

4. ANALYTICS: Anals are parts of a serial individually described as monographs with the same call no. for each part and the addition of nos./vols. and dates. The barcodes will have only the call no. and nos./vols., while the part will have call no., no./vol., and date. NOTE: These barcodes can be applied but are not in numerical order on the sheet. Be careful to match the part to the barcode and that no items are missed on the shelf. In some cases these anals have been bound together. DO NOT barcode these since each physical volume can have only one barcode. This applies in all cases, not just anals.
5. WHERE TO PLACE FINISHED SHEETS AND FORMS: When you have completed a sheet as fully as possible, place in box on a table at the head of the stairs on each floor. There will also be a separate box in the same location for the "Barcode Problem" form. In some cases you will find a string of barcodes with call nos. that seem unrelated to the area you are in. Instead of filling out a form for each of these barcodes, simply hold on to them until you return to the Circulation lobby area and place in a box labeled "Problem Pages".
6. HELP: There will be people going from floor to floor to answer questions throughout the day. If the person is not immediately available just continue until they are available.
7. LUNCH, BREAK, RESTROOMS, ETC.:
Breaks are 10:30-10:45am and 2:30-2:45pm.
Refreshments will be furnished in the lobby.
Lunch will be from 12:00 noon to 1:00pm.

PLEASE: NO FOOD, DRINK, OR SMOKING IN LIBRARY except during the break in the lobby area (and no smoking then).

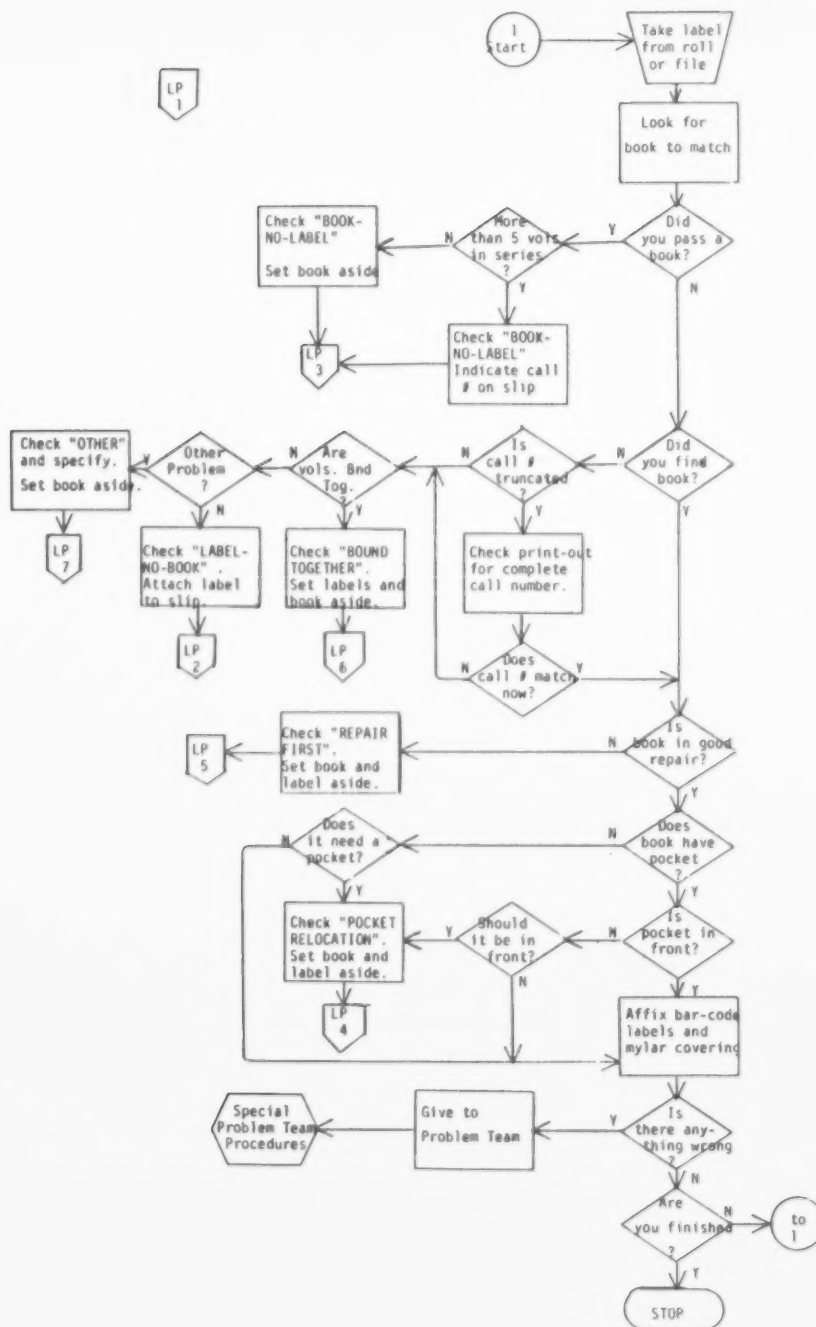
Restrooms are located on the 1st, 3rd, and 5th floors of the addition of King South.

We are anxious to barcode as many books as possible during the four days, but accuracy is more important. Please work at a rate comfortable to both partners. If either of you becomes physically uncomfortable, please return to the Circulation desk and let us know.

THANK YOU FOR YOUR EFFORT, IT IS GREATLY APPRECIATED.

APPENDIX D

BASIC LABELLING FLOW CHART



EDUCATION SMART BAR CODE LABELS

These are already "linked" in the computer to particular items and must not be lost or destroyed. Do not detach any label from the sheet until the book to which it should be applied has been located and you are ready to put the label on it. (If the worst happens, and something does happen to a "smart label" - save the "remains" and report the problem to a supervisor, who will save it for correction on the database)

Supplies: pen or pencil, paper clips, 3 X 5 cards, book truck, smart barcode labels, sheets of barcode labels in "threes."

1. Sheets of labels are arranged in numerical order in a box in Room 305. There are two identical pages and matching labels must be removed from each sheet in order to barcode an item (bound volume).
2. There are sign-out sheets for smart label pages in a notebook which is kept in adjacent to the full sheets of labels in that room. Sign your name and the page number(s) you are taking. Take no more than one pair of sheets for each hour you plan to work at a session and never leave sheets unattended in the stacks or elsewhere. Also take a sheet or two of the "dumb" barcode labels to use on added volumes and copies. Try to use up any of these sheets that have been partially emptied, and return these emptied sheets to room 305 as well as the sheets of smart labels.
3. Start with the lowest numbered page of your sets. Write your name at the top of the sheet. Read from sheet of labels and look on the shelves for a matching volume. The labels are in call number sequence, but there are not labels for all items on the shelves.
4. Do not apply barcode labels to unbound items. Leave the labels on the sheets and make a note on back of the sheets that "call number" is unbound.
5. Labels for Microfiche, Mifiche, Microfilm, Mifiche, LP (recordings), Cassette, etc. remain on the sheet for correction of records.
6. If there is one set of labels and one book which matches exactly, apply the bar code labels to the item.
7. Some of the labels have a specific volume number or other designation, such as "no." or "pt." as part of the call number, if these are an EXACT match for items on the shelf, apply them.
8. In some cases, there are two sets of barcode labels with the identical call number. Do not apply either set of labels to the item. Make a note on the back of the sheet, "Dup. (call number)."
9. If there is one set of labels, and more than one COPY of the item with that call number on the shelf:
 - (1) If the items on the shelf have the exact call number with the addition of COPY numbers apply the smart barcode label item with the lowest copy number.
 - (2) Write the call number in the upper left hand corner of a card.
 - (3) Write the barcode label number of the smart barcode label on the card, drawing a rectangle around it.
 - (4) To the left of the rectangle, write the copy number or accession number of the volume to which it was applied.
 - (5) Apply two of a set of three labels to each additional copy and add the third of each set to the card.
 - (6) Add copy numbers to the left of the labels on the card to identify the specific copy to which the labels were applied.

- (7) Both sides of the card may be used for additional barcode labels applied to added copies, but if more than one card is required for a title, be sure that the call number is on each card.
10. If there is one set of labels, and more than one volume with that call number on the shelf:
 - (1) Look at the next labels to see whether they have the same call number with a designation such as "v.2" or "no.35" as an added line.
 - (2) If there are any labels for specific volumes, numbers, etc., remove the labels without the designation of the parts and put both of them on a card. Add a note to the card "has smart labels for separate volumes." Apply the barcode labels which have designations of parts to the items which they match. (In case several of the volumes or numbers are bound together, so that no one label fits them, make a note of what is bound as a unit to the back of the sheet of labels, and do not apply the labels which don't exactly match the volumes as they are bound.)
 - (3) If there are not additional labels with the same call number, apply the smart labels to the earliest numbered volume or part on the shelf.
 - (4) Write the call number in the upper left hand corner of the a card.
 - (5) Write the barcode label number of the smart barcode label on the card, drawing a rectangle around it.
 - (6) To the left of the rectangle, write the volume number, part number, etc., of the item to which it was applied.
 - (7) Apply two of a set of three labels to each additional volume and the third label of each set to the card.
 - (8) Add volume numbers to the left of the labels on the card to identify the specific copy to which the labels were applied.
 - (9) Both sides of the card may be used for additional barcode labels applied to added volumes, but if more than one card but if more than one card is required, be sure that the call number is on each card.
11. When a pair of matching sheets has been completed paper clip them together and begin with the next sheet.
12. If work is stopped in the middle of a pair of sheets, write "incomplete" at the top of the sheets so that they can be completed at next session.
13. At the end of a session in the stacks, return the sheets of labels, cards, and your supplies to Room 305.
14. Staple completed pairs of sheets together and place them in the stack marked "finished." Circle the sheet number on the sign-out sheet to indicate that the work has been done.
15. Place partially done sheets in stack marked "incomplete" and remove them from your name on the sign-out sheet.
16. Check in sheets on which no work was done and place them in order in the box of smart labels.
17. Be sure that you have returned and signed in all of your sheets.
18. Place the cards with additional labels in the marked box.
19. Put incomplete sheets of "dumb" labels on top of the box of "dumbs" so they can be finished. Keep the blank labels off the bottom of the sheets, but the sheets can be disposed of after they have been counted.

10/3/85-JWW

Notes:

All completed pages of smart labels are retained for follow up on items not located and labels which could not be applied. In the unusual case that a sheet of "smart labels" is emptied in the first session at the stacks it is retained in the numerical sequence with the other sheets.

Keep completed sheets in page number order so that problems can be worked on later.

Emptied sheets of the "educable" (sets of three) labels may be disposed of after they have been counted.

RUTGERS UNIVERSITY LIBRARIES
RECOMMENDED PROCEDURE FOR BARCODING LIBRARY COLLECTIONS
FINAL DRAFT

Prepared by
PRO LIBRA ASSOCIATES, INC.

April 8, 1983

Edward Shiley, Project Consultant
Wilson Stahl, Project Design

Rutgers University requested PRO LIBRA ASSOCIATES, INC. to review the various factors that would impact on the project to place barcode labels into library materials required for the automated circulation system, and design general procedures to be used for the project. The barcode labels are being generated from the machine-readable records of library materials. These labels are called "assigned" labels, because the barcode number has already been assigned to the machine-readable record. Approximately 20% of the Rutgers University Libraries collection (500,000 items) are in machine-readable form and therefore should have assigned barcode labels. These collections are housed in ten different libraries, with almost 40% of them located in the Alexander Library.

The labeling process is also to function as an inventory for those items having assigned labels. Thus, the item for each assigned label is to be accounted for as part of the actual labeling project. The shelf list in each library is to be the authority for that library. It is important to note that this type of inventory is significantly different from a total "shelf list to shelf" inventory. To attempt to do a total inventory in conjunction with the labeling project would greatly slow down the process and limit the efficiency of achieving the primary objective of putting assigned labels into their respective items.

Two-fundamental questions PRO LIBRA was asked to address are the level of access to the collections which should be maintained during the labeling project, and whether all items in circulation should be recalled before the labeling project is begun. It is our opinion that, if at all possible, there should be no access to the collections during the labeling project. This will obviously eliminate disruption of the workers, and also eliminates the need for additional shelf reading. In order for this to be feasible, the labeling of any library should be accomplished in a very short time period (one or two days). If it is not possible to limit access to the collection during the labeling, a compromise is to close access to the parts of the collections being labeled that day. As parts of the collection are labeled they can be opened again. This compromise will require each section to be shelf read when it is closed off thereby making it a more labor consuming approach than the preferred approach. We cannot endorse allowing open access to the collections during the labeling project. This would greatly reduce the effectiveness and efficiency of the overall process.

We also do not recommend a recall of books in circulation. First, recall efforts are generally far less than 90% successful in getting items returned. Second, the number of recalled items likely to be found and labeled compared to the number of items which will be processed as returned items (e.g. circulation records cleared and items shelved) does not seem to indicate that a recall would be cost effective. Third, since a recall must precede the labeling project by several weeks, a recall would have to occur while classes are in session if the labeling was to be done during intersession (or vice versa). In either case a recall would impact on the students' use of the collections.

SHELF READING PROCESS

To determine whether each library's collection needs to be shelf read before beginning the labeling project, use the following method:

1. Determine size of the total collection (in volumes) involved in the labeling project and the number of shelves the collection occupies. Divide the collection size by the number of shelves to determine the average number of volumes per shelf.
2. Multiply total collection size by 0.05 to determine 5% of collection. Divide 5% figure by average number of volumes per shelf to determine total number of shelves to be sampled.
3. Divide the total number of shelves occupied by the total collection by the number of shelves to be sampled to determine the interval used to select the shelf to be checked (e.g. if the interval = 20, then every 20th occupied shelf should be checked).
4. To estimate the length of time required to shelf read for this sample, assume one trained person can shelf read 500 volumes per hour.

An acceptable error rate for shelving is one volume out of place for every two shelves checked for an approximate error rate of 2% (percentage varies slightly with average volume per shelf count). If the overall error rate is higher, then the entire collection should be shelf read before the labeling is begun. To insure uniformity of labeling rate (number of volumes labeled per hour per worker), any part of the collection with a shelving error rate greater than 2% should be shelf read.

Attached is a list of the number of shelves to be sampled and the selection interval for each library based on the data provided.

Labeling Process

Before putting the barcode labels in any collection, a job schematic (as outlined below) should be designed and the labels for each job identified. It is most efficient to have packets ready on the day of the labeling process which contain the labels, supplies and instructions for each job. If the labeling process will take place over a long period of time it is recommended that a job logbook be used for inventory control.

Job Schematic

After receiving the barcode labels from the vendor, the following steps should be followed for each library:

- 1) Separate the labels into groups by floors.
- 2) Sort the labels into groups that match the different collections on each floor.
- 3) Further subdivide the labels into groups that match the ranges (beginning and ending call numbers) on each floor within a given collection.
- 4) If the range label groupings are large divide them into specific jobs (ie: four or five sheets of labels per job). Factors which govern job size are aisle size, range length, cross collection groupings, etc.

Procedure

Written instructions on each job packet plus an oral review before beginning the labeling process will insure the highest degree of accuracy. Since each library is unique in physical layout; each set of barcode labels unique to its collection and to problems incurred in production, and its crew and working conditions unique to each job, it is impossible to give a list of instructions which will work for every job. These instructions, however, should include at least the following information:

- 1) A review on how to locate books by call number (particularly good for staff who do not do this as a part of their daily routine).
- 2) A detailed description and illustration of where and how to place the barcode labels in all books and serials, in music scores, on sound recordings, on film, on maps, etc.
- 3) The criteria and procedures for pulling damaged items from the shelves (ie: book spine very loose or missing, book covers detached, etc.).
- 4) The policy for handling multi copies and multi volumes where one or more of the copies or volumes does not have an assigned label.

Other factors important to the design of a barcode labeling project must be determined according to the goals and conditions of the specific job and after receiving the labels from the printer. (See Appendix II for a sample format of Instructions).

Step One (For All Libraries)

The first step of the labeling process takes place at the shelves. The person labeling should:

- 1) Search for the books in the order they appear on the assigned barcode label sheets for that job assignment. These are printed in shelf list order beginning at the upper left corner and reading down the page column by column.

This makes searching for books to match the label sheets faster than seeing if each book has an assigned barcode label on the sheets. Labelers should be aware that the title on the assigned barcode label may not exactly match the title of the book. When a match is made, label the book.

- 2) Handle multi copies and multi volumes which have one or more missing labels according to established policy.

A suggested policy for this is to use unassigned barcode labels. See Appendix III for examples.

- a. Place the top portion of the unassigned barcode label in the book or on other items according to the instructions for assigned barcode labels.
- b. Place the bottom portion of the unassigned barcode label on a pad of lined paper on the left side (skip every other line) and write the title and call number of the copy or volume for which you have an assigned barcode label opposite the bottom portion of the unassigned barcode label. (See Appendix III for example).
- c. At a later time update the data base and shelf list from the information in "b".
- 3) Pull all damaged books from the shelves according to established guidelines. There must be bookcarts or shelving available to hold this material.
- 4) Check the assigned barcode labels remaining on the label sheets against the circulation printout. If matches are found mark the assigned bar code label (in pencil) with a "C" on the top left corner. The circulation printout may be in each job packet or at the team leader's station depending on whether the entire library is labeled at one time or in segments.

Step Two (For All Libraries)

The second step of the labeling process is to check the assigned barcode labels remaining on the sheets against the shelf list.

- 1) Do not check labels marked in the upper left corner with "C" to indicate they are in circulation.
- 2) If the shelf list shows the item is held by the library, indicate the item missing on the data base record.
- 3) If the item is not listed in the shelf list, check the card catalogue, under the title entry, for a call number change.
 - a. If the call number has been changed, change the call number of the record in the data base, find the book, and label the book with the barcode label.
 - b. If the call number has not been changed (the title does not appear in the card catalogue), send the label to Central Technical Services in Alexander Library.

Step Three (For Central Technical Services)

All assigned barcode labels for books not found in all libraries should be sent to Central Technical Services. At this point in the labeling process, a decision must be made on how extensive the search will be for books which didn't turn up in the initial labeling process, and on what to do with the unused assigned barcode labels. Ten thousand left over labels represents an investment of only about \$300, an amount which would quickly be surpassed by labor costs associated with extensive searching for specific items and retention of labels for possible future use.

If the amount of unused labels merits the time and expense of further searching, take the following steps:

- 1) Check the assigned barcode labels returned from all libraries against the duplicate shelf list of each library which is held by Central Technical Services.
 - a. If a shelf list indicates the item is held by a library other than the one originally receiving the barcode label, send the label to the library holding the item with instructions to follow Step Four For All Libraries.
 - b. If the duplicate shelf list of the library originally receiving the label indicates that library holds the items, correct the duplicate shelf list to show the items missing, delete the record from the data base, and destroy the barcode label.

- c. If the item does not appear in any of the duplicate shelf lists, delete the record from the data base and destroy the assigned barcode label.

Step Four (For All Libraries)

This step is necessary only if step three has been initiated. When any library receives assigned barcode labels from Central Technical Services, they should:

- 1) If a book is found to match one of these barcode labels, put the label in the book and change "holding library code" in the data base.
- 2) If a book is found with an assigned barcode label already attached, call up the record in the data base associated with the label sent from Central Technical Services, delete the record and destroy the label.
- 3) If the book cannot be found, delete the record from the data base, and notify Central Technical Services to change their duplicate shelf list.

PROJECT STAFFING

It has been our experience that a large barcode labeling project being done in a short period of time requires close supervision to insure a high degree of accuracy. We have found the optimum span of control is 8 to 10 workers, so there should be one team leader for every ten workers, and one project co-ordinator for every ten team leaders.

Workers

The job of the workers (labelers) has been described in detail earlier in this report. We have found that individuals working alone are more efficient than people working in pairs on a labeling project of this type. It is also important that each worker should have at least a ten minute break after every continuous two hours of labeling.

Team Leaders

The team leaders are key people to a smooth, efficient operation. Prior to the labeling project they break their location into individual jobs and set up the job packets and labels so they can distribute them in the most efficient manner.

The day(s) of the labeling project they must check the members of their team in the beginning of each session, assign working locations, distribute the materials for each job, and collect all materials at the end of each session. They also call all break and lunch times, keep a log of which jobs are completed, and record which jobs need to be re-checked due to special problems.

During the labeling project team leaders spot check each team member's work for accuracy, take note of team member's work habits and help the co-ordinators determine if any team member must be let go. They are also the first line of authority in problem solving for individual workers. As such they will make decisions concerning:

- 1) Titles of barcode labels and book spine titles which are not exactly the same.
- 2) Call numbers on barcode labels being slightly different from the call number on the book.
- 3) Call number sequence out of order on the shelves -- whether to continue the job with a less degree of accuracy and at a slower pace, or whether to have the area shelf read again before continuing the labeling process.
- 4) Discrepancies in policies about multi copies and multi volumes which do not fit what actually appears on the shelves.
- 5) Whether or not an item should be pulled for repair or labeled and left on the shelves.

Co-ordinators

Co-ordinators are responsible for planning the overall project for each project (library) into the best workable sections for each team. They must determine the number of teams needed to get the work finished in the required time and the amount of supplies needed for the teams. Policies concerning duplicate labels, how to handle books pulled for repair, how to handle multi volumes (copies) without barcode labels, and how to handle assigned barcode labels left over at the end of each job are a few of the co-ordinators concerns. They must establish working schedules, plan around logistic problems, and determine how to finish the labeling project (See Step Two For All Libraries).

It is the responsibility of the co-ordinator to train the team leaders. This session can include a sample labeling by team leaders and should include the method of handling all anticipated problems on the job. The team leaders will need information on how to set up individual jobs and on the layout of their job areas.

GENERAL PROCEDURES FOR BAR CODING

The main objective in placing bar code labels is to have them in a consistent spot in the book in order to speed up procedures at the Circulation Desks.

The bar code label should be placed on the right inside back cover (in the middle) just below the accession number (close to the top if accession number not there). Remember that the punched cards will eventually be removed. Note that accession numbers of older books are on the inside front cover.

Make sure you leave room for the Mylar overlay - it extends $\frac{1}{4}$ " past the white bar code label on all four sides. Leave enough room so that the Mylar doesn't extend over the edge of the page or cover. Note that the overlay is clear and can go over the accession number and/or call number.

Try not to put the bar code label and overlay over any bumps (e.g. labels, mending tape) - it won't stick as well, and it may be difficult to "read".

Place bar code label horizontally. If book is too narrow, place it vertically.

If in doubt, use the "dummy" bar code label and overlay supplied to make sure it will fit, before you try.

Do not label books badly in need of repair - (i.e. falling apart). Do not set aside any types of problems which are not related to the bar coding project (e.g. call number problem).

If the book pocket and the date due slip are not on the inside back covers but rather one or two pages inside, place the bar code label on the same page.

Please try to keep the books in order as you label. Books set aside should be left for stacks staff to reshelve.

Please try to speak softly - Other teams will be working nearby.

Remember : the most critical part of the whole procedure is to write down the accession number correctly.

TYPICAL PROBLEMS

1. Writing on inside of cover which is not important : (e.g. other books by author, map, books in the series, bibliographical note about author). The book pocket may already be partially covering.

Solution : put bar code label on top of writing.

2. Writing on inside of cover which is important : (e.g. table of contents, index).

Solution : If information repeated somewhere else (e.g. inside front cover), put label on top. If information not repeated, put bar code label on left inside back cover.

3. Material tipped in on back inside cover : (e.g. errata sheet).

Solution : Remove and place further inside book if possible or inside front cover.

4. Small Book : no room for bar code label on right inside back cover (book pocket takes up most of the space).

Solution : Place bar code label underneath date due slip on left inside back cover.

5. Date due slip and book pocket both on right side.:

Solution : If room for bar code label, move date due slip to left side. If no room for bar code, leave date due slip and book pocket and put label on left.

6. Microforms

Solution : Leave aside for project leader.

7. Insurmountable problems : (e.g. very small book, important writing inside all covers).

Solution : Leave aside for project leader.

8. Spoiled labels : (e.g. applied upside down, creased, wrinkled)

Solution : Throw label away and mark "VOID" on coding sheet.

EQUIPMENT AND SUPPLIES FOR EACH TEAM

Book truck	1
Shelf list drawer	1
Bar code labels	30 sheets
Pens	2
Pencils	2
Plastic jackets	
Paper streamers	
Waste cards	
Cleaning cloths	
Statistics sheet	1
Bar Code Manual	1
Large rubber bands	
Trash bag	
"Stop" flag	

The supervisor has the responsibility to make sure that each team has the necessary equipment and supplies. To assist in carrying out this responsibility, each team should take a few minutes at the end of each work shift to empty the trash bag and replenish the supplies on the book truck. Also, take the books from the bottom of the truck and place them in the spot designated by the supervisor.

Follow-up on smart barcode labels

OPTIONS:

1. Have each finished sheet checked against the circulation files.
2. Catch volumes at receiving shelves.
3. Run sheets through again when the catchup tape labels are done.

Depending on size of collection and extent to which smarts have been applied, approach may vary by location.

Do not remove barcode labels from label sheets unless they are to be applied to a volume with the matching call number or attached to a charge card or search card for the item.

1. Keeping pages in numerical order will keep them in call number order as well.
2. Skip labels for non-book materials, such as "Microfiche" or "Cassettes." These need to be corrected by GTS before labels are applied.
3. Some labels which are left on the sheets represent separately cataloged titles which are bound together. These labels have IDENTICAL call numbers, but DIFFERENT titles. Others have IDENTICAL call numbers and IDENTICAL titles, usually as the result of duplicate records used in processing. Leave these on the sheets since they need to be checked by GTS before the labels are applied.
4. If a volume which matches a set of labels is located, remove the labels from the sheets and apply them to the volume.
5. Some labels have "v." or "no." or some other designation below the call number indicating that they are for parts of a set or series. If the entire call number, including the designation of the part, matches a separate physical item, the labels may be applied to the book. If there is a label with the same call number, without volume designations, make a note on a card for GTS, that there are labels for separate volumes, and place the set of smart labels without volume designations on the card.
6. Varying policies on barcoding of unbound items may have been followed in different collections. Check to see what was done in each library, since some titles which match labels may have been located on the shelves and not barcoded. If the decision is made to bind something which has been noted as unbound, the smart labels, with their backing, may be cut from the sheet and clipped to the item when it is sent for binding. Otherwise, the decision to barcode rests with the library.
7. Remaining labels which are on sheets, other than those which have been described, represent items which were not located on the shelves, and need to be checked against the circulation files, special shelving locations, and any other files, such as search lists for missing items.
9. If a volume matching a set of labels is checked out, cut the labels, with a margin of backing, from the sheets and attach them to the charge card so that they can be applied when the volume is returned. Please leave the margin of the sheet intact if there are other labels on it.
10. If a record of a missing item is located in a search file, remove the labels, with a margin of backing, and attach them to the card, so that they will be handled when the title is located or declared lost.
11. If the item is located in a special shelving arrangement, the labels may be attached, but changing of the records for the location in the collection must be done either by the library or by GTS, depending on

what the sub-location is. WRITE THE SMART BARCODE NUMBER ON A CARD, AND MAKE A NOTE "CHANGE TO"

12. If no record is found of the material represented by the label in any other source, check the call number in the shelf list to see whether the item is still represented there. If there is a shelf card, make a search card and attach the labels, with a margin of backing, to it for additional searching in stacks and eventual location or withdrawal.
13. If there is no shelf card for the item, make a note of the fact on the back of the label sheet.
14. Looking on ACORN by the barcode number (in LXVU, use find it=30081nnnnnnnnnn) you can see the record for the item. By looking in the catalog under author and title, you can find out if the call number on the label was incorrect. Since the record may have been created for the wrong library, you will not always have cards in the departmental catalog. Following up in the General PC is usually more effective, unless there is something about the number that seems strange, such as stray asterisks, etc.
15. The log of bar code pages is with the barcoding supplies in the Science Library. If a sheet is completely cleared of labels, write "COMPLETED" by the sheet number, and you may dispose of the empty sheet.
15. After all checking has been done, return the remaining barcode pages to Jean Wright. Any cards for changes, or other special situations which arise because of the follow-up procedure should be returned with the pages, and will be given to GTS as appropriate.

Smart Barcoding Problem-Solving Procedures: Items not on shelf

For those items not on the shelf at the time of smart barcoding (identified with the red dot on the barcode label), locate matching shelf list and print-out entry:

I. MATCHING SHELF LIST FOUND

A. For those items shelved in special locations:

1. Note on print-out information about special location(s) using Geac location codes and material types as appropriate, e.g. B*REF REF0. (See Appendix I: Location code and material type tables.)
2. Remove red dot and attach barcodes to those items shelved in special locations. For those items not found at time of barcoding, add black dot to barcode and note on print-out nos [not on shelf] with date of attempted barcoding.
3. Update location and material type information in the 966 field, using MRMS (see MIT's MRMS User Documentation, p.41-2, for procedure.) Update location and material type information even if item has not been found at time of barcoding (see I.E. below) or if item is in poor physical condition (see problem-solving procedures: items in poor physical condition).

B. For those items previously withdrawn (other copies remain in local unit's collection):

1. Record on print-out withdrawn information, including date item was withdrawn, if available, using standard abbreviation w/d 3/30/81 [withdrawn 3/30/81].
2. Delete holding(s) using MRMS (see MIT's MRMS User Documentation, p.40, for procedure.)
3. Delete copy information in the Circulation system (see MIT's Geac Circulation Manual, p. for procedure.)
4. Attach barcode to Cataloguing Problem Report/Lost Monograph Notification form (Lib 10-76) in section headed Monograph Declared Lost. Check box and forward to MRMS Unit, Database Maintenance Section, Catalogue Department.

Smart Barcoding Problem-Solving Procedures: Items not on shelf

C. For those items previously marked missing:

1. Record on print-out missing information using "Short Names" contained in Table 16: Missing Item Categories (see Appendix II) and date item was declared missing, if available.
2. Add missing information to circulation record (see MIT's Geac Circulation Manual, p. for procedure.)
3. Retain barcodes until item is located or withdrawn.

D. For those items without special location and not previously withdrawn or marked missing:

1. Note on print-out nos [not on shelf] with date of attempted barcoding.
2. Add black dot to barcode.

E. For those items nos [not on shelf] at the time of barcoding, identified by black dots, attempt to barcode again within one month of the initial barcoding.

1. If item found, remove black dot and affix barcode following standard procedures. Annotate print-out fnd [found] with date.
2. If item not found, add missing information to circulation record, using "Short Names" contained in Table 16: Missing Item Categories (see Appendix II). Retain barcode until item is located or withdrawn.

II. MATCHING SHELF LIST NOT FOUND

A. Check local withdrawn file, if available, to see if item was previously withdrawn.

1. If record found in withdrawn file:

- a. Note on print-out All cops. w/d [all copies withdrawn] and date of withdrawal.

Smart Barcoding Problem-Solving Procedures: Items not on shelf

- b. Delete copy information or record from circulation system (see MIT's Geac Circulation Manual, p. for procedure.)
 - c. Attach photocopy of withdrawal record to Cataloguing Problem Report/Lost Monograph Notification form (Lib 10-76) and affix barcode(s) to Monograph Declared Lost section. Check box and send form to MRMS Unit, Database Maintenance Section, Catalogue Department.
2. If no record found in withdrawn file, or if no withdrawn file, check main entry to confirm call number information.
- a. If main entry found, check to see that information on card matches barcode information.
 - i. If call number information on main entry matches barcode, mark print-out nos [not on shelf] with date of attempted barcoding and no s.l. [no shelf list]. Make replacement shelf list card.
 - ii. If call number on main entry does not match barcode, check shelf list under new call number. If shelf list found, note special location and/or missing/lost information if any and then follow problem-solving procedures: item does not match. If no shelf list found, follow II.A.2.a.i. and then follow item does not match procedures.
 - b. If no record found in card catalogue, mark print-out nos [not on shelf] with date of attempted barcoding and no cds [no cards]. Add black dot to barcode. Notify MRMS Unit by completing Barcoding Problem Report form and checking number 1. Attach a photocopy of the annotated smart barcoding print-out.

Smart Barcoding Problem-Solving Procedures: Items not on shelf

- B. For those items nos [not on shelf], without matching shelf lists follow steps in I.E. above.

Smart Barcoding Problem-Solving Procedures:
Item already barcoded

For those items already barcoded (smart or dumb barcode previously affixed) when smart barcoding is attempted, identified by a blue flag inserted in item and a dark blue dot on barcode:

1. Do not remove existing barcode from item.
2. Do not affix correct barcode to item.
3. Complete Barcoding Problem Report form (Lib 6-85).
 - a. Place smart barcode in plastic sleeve and attach to problem report form.
 - b. Add sender information and check no.2 on form.
 - c. Charge item out at circulation and send it with the problem report form to MRMS Unit, Database Maintenance Section, Catalogue Department.

Smart Barcoding Problem-Solving Procedures:
Items in poor physical condition

For those items in poor physical condition, identified by light blue dots, and turned on spine with white flags inserted:

1. Pull items from shelf and examine to determine appropriate binding or repair treatment.
2. Complete binding or repair forms following standard procedures and remove white flag from item.
3. Staple a "TO BE BARCODED" slip (see below) to the charge card.

TO BE BARCODED.
FORWARD TO
PROCESSING
OFFICE UPON
DISCHARGE.

4. Follow standard procedures for filing charge cards for the items being sent to the bindery or to the Binding and Repair Section, 14E-210.
5. When items are returned from the Binding and Repair Section and are discharged, match item with barcode on pad and affix following placement guidelines contained in the Smart Barcoding Procedures.

Smart Barcoding Problem-Solving Procedures:
Item Incorrectly Barcoded

For those items incorrectly barcoded (accidental misapplication of barcode to incorrect item), identified by a black flag in volume:

1. Do not attempt to remove barcode from item.
2. Do not affix another (correct) barcode to item.
3. Complete a Barcoding Problem Report form (Lib 6-85).
 - a. Place any appropriate barcodes in plastic sleeve and attach to form. Complete sender information and check no.3.
 - b. Locate and include item the barcode correctly matches, if possible. (If matching item not found, follow problem-solving procedures: items not on shelf.)
 - c. Charge item(s) out at circulation and send incorrectly barcoded item, item to be barcoded and Barcoding Problem Report form to MRMS Unit, Database Maintenance Section, Catalogue Department.

Smart Barcoding Problem-Solving Procedures:
Item does not match barcode information

For those items identified with a yellow dot on barcode:

- A. For accessioned items where barcode lacks accession number, match the barcode information to the online MRMS record by searching the barcode number (See MIT's MRMS User Documentation, pp.18-24 for search technique and p.32 for use of DISPLAY function).
1. If collation (tag 300) on MRMS indicates a single volume title, compare the accession number and location information in tag 049 to the item.
 - a. If match occurs in both accession number and location and all other criteria match (call number, author, title) barcode item, following barcode placement guidelines in Smart Barcoding Procedures. (Do not inform the Catalogue Department since no addition to the 966 tag is necessary.)
 - b. If match does not occur, do not barcode item. Follow B. below.
 2. If collation (tag 300) on MRMS indicates a multi-volume set, see Smart Barcoding Problem-Solving Procedures for multi-volume sets.

B. For items where author, title, call number or accession number information does not match information on barcode, match the bibliographic record information from MRMS to the local catalogue's shelf list and main entry.

1. If a plausible match can be determined between MRMS and the catalogue records, complete a Barcoding Problem Report form (Lib 6-85).

- a. Add sender information and check no.4 and appropriate category of discrepancy (a. call number, etc.).
- b. Attach photocopy of main entry or shelf list of "matching" card set.
- c. Insert barcode in plastic sleeve and attach to Report form.
- d. Charge item out at circulation and send it with its Report form to MRMS Division, Database Maintenance Section, Catalogue Department.

Smart Barcoding Problem-Solving Procedures:
Item does not match barcode information

2. If no match can be determined by comparing the MRMS record with existing catalogue records, complete a Barcoding Problem Report form (Lib 6-85).

- a. Add sender information and check no.4 and appropriate category of discrepancy.
- b. Insert barcode in plastic sleeve and attach to Report form.
- c. Charge item out at circulation and send it with its Report form to MRMS Division, Database Maintenance Section, Catalogue Department.

Smart Barcoding Problem-Solving Procedures:
Multi-volume works

For those items identified with a yellow dot on barcode that have been determined are multi-volume sets (see Smart Barcoding Problem-Solving Procedures for item does not match barcode information, Section A.):

1. Locate matching shelf list and make a photocopy of it. Include only one title per photocopy. This photocopy will serve as the "holdings sheet" for the title. (If you need additional paper to record all holdings add at the top of each sheet the GRSN number, the call number, author or main entry and the title of the set.)
2. Proceed to the stacks with a) the smart barcoding print-out for the title in hand, b) the photocopy of the local shelf list including all accession numbers, c) the smart barcode generated for the title, d) a pad of dumb barcodes, e) sheets of 8 1/2" X 11" paper, and f) a stapler.
3. Verify that the title on the item matches the title on the smart barcoding print-out, and that the call number, charge card and pocket match the information on the smart barcode.
4. Put volumes in numerical order on shelf. If there is a gap in the sequence, check this against the photocopy of the shelf list. If the volume should be on the shelf, add note nos[not on shelf] + date next to accession number on photocopied shelf list and affix duplicate barcode to the holdings sheet.
5. Affix the smart barcode to the first volume in the sequence, following the guidelines for placement in the Smart Barcoding Procedures. Write the last nine digits of the barcode number, followed by the volume and part number, e.g. 123 45 678 9! v.2 pt.3. NOTE: Holdings will be recorded in the language of the work. Be consistent in the abbreviations used when recording holdings. (See Appendix III: List of preferred holdings abbreviations)
6. Affix dumb barcodes to each subsequent volume and affix its duplicate barcode to the holdings sheets, after writing its corresponding volume and part number on the holdings sheet.
7. After barcoding all available volumes of a title (and noting volumes that are missing, withdrawn, etc.) update local shelf list with barcode numbers, linking them with their corresponding volume and accession numbers.
8. Input holdings information into MRMS (see MIT's MRMS User Documentation p.44-5 for procedure). Follow problem-solving procedures: items not on shelf for volumes not found at time of barcoding.

Smart Barcoding Problem-Solving Procedures:
More items on shelf than barcodes

For multiple copies of the same title for which not enough smart barcodes have been generated, identified by the orange dot:

1. Locate matching shelf list and make a photocopy of it. Include only one title per photocopy.
2. Proceed to the stacks with a) a copy of the smart barcoding print-out, b) a photocopy of the local shelf list, including all accession numbers, c) the smart barcode(s) generated for the title, d) a pad of dumb barcodes, e) additional sheets of 8 1/2" X 11" paper, and f) a stapler.
3. Locate the items and verify that all copies have the exact same author, title, location and call number. (NOTE: QA372 .P76 1980 is not the same as QA372 .P76).
4. Separate the copies that have been previously barcoded (if any) from those remaining to be barcoded. Match the copy with the smart barcode that has been produced. Write the GRSN number on the photocopy of the shelf list and affix the smart barcode.
5. Barcode all remaining copies, affixing the dumb barcode to the item, and its duplicate to the photocopied shelf list or to the additional sheet(s) of paper as needed. NOTE: If you use additional sheets of paper, copy the GRSN number, the author, title, and call number from the photocopied shelf list, before affixing the duplicate barcode(s).

If, according to the photocopied shelf list, copies are missing or nos [not on shelf] at the time of the attempted barcoding, add additional holdings information to smart barcoding print-out. Attempt to locate item(s) during subsequent barcoding.

6. After barcoding all copies of a title, input holdings into MRMS (see MIT's MRMS User Documentation, p.43, for procedure). Add holdings to USL as needed.

TO: MRMS Unit
Database Maintenance Section
Catalogue Dept., 14E-210

DATE: _____

FROM: _____
_____Library

BARCODING PROBLEM REPORT

1. _____ Item and card set not found (attach photocopy of smart barcoding printout)
2. _____ Item already barcoded (Insert unused barcode in plastic sleeve. Attach it to report and enclose in item.)
3. _____ Item incorrectly barcoded (Insert correct barcode, if available, in plastic sleeve. Attach it to report and send it with both the incorrectly barcoded item and the item that correctly matches barcode.)
4. _____ Barcode does not match item (check problem area only)
 - a. _____ Call number
 - b. _____ Accession number
 - c. _____ Author
 - d. _____ Title

Indicate sources checked: a. _____ MRMS
GRSN: _____

b. _____ Card catalogue (attach photocopy of pertinent card, if found)

COMMENTS:

BARCODING REPORT

Call no.:

Check one of the following:

- () Book without label (put this slip in book)
- () Label without book (attach label to this slip)
- () Bound together (attach labels to this slip and put slip in book)
- () Not bound together (attach label to this slip and keep slip and books together with elastic band)
- () Barcode label marked "SCF" or "CLOSED" (attach label to this slip, note call no. above and give slip to trouble-shooting personnel)
- () Book shelved in DL stacks by mistake (note proper location to which book is to be routed above and put this slip in book)
- () Incorrect call no. (put this slip in book)
- () Duplicate call numbers - one should be marked copy 2 (attach label to this slip and keep slip and books together)
- () Other (please specify)

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

BARCODE PROBLEM

Call # _____

Page # _____

Not on shelf ☐

Multi volumes, one barcode ☐

Multi barcodes, one volume ☐

Lost book marker ☐

No barcode ☐

Other problem _____ ☐

Applied barcode by mistake ☐

1284 11/11/11 1234

COLOR SCHEME FOR PLASTIC JACKETS AND STATISTICS SHEET

BLACK:

- Nothing on shelf
- Missing copy and/or volume

GREEN:

- Multi-volume titles with more than 10 volumes

YELLOW:

- Call number on card does not agree with item on shelf
- Item in paper wrapper
- "Dashed on" entry on shelf card
- No shelf card
- More than one shelf card for the same call number
- "Card removals"
- Temporary slips
- "Bound with"
- "Not listed on shelf card"
- Books in disrepair

STATISTICS FOR MAIN AND UCL BARCODE PROBLEM-SOLVING

	<u>MAIN</u>	<u>UCL</u>	<u>TOTAL</u>
1. Volumes barcoded in stacks	7,318	2,950	10,268
2. Barcodes applied to wrong volume	967	322	1,289
3. Volumes barcoded on return from Circulation	5,216	-	5,216
4. Volumes with records to be corrected in GEAC	3,378	602	3,980
5. Volumes found in stacks with wrong call number (Mislabelled)	556	63	619
6. Volumes sent to be rebound	199	37	236
7. Have barcodes for volumes of which we can find no trace--no books, no cards	792	-	792
8. Barcodes for volumes known to be withdrawn	469	-	469
9. Barcodes received for volumes in another library	1,821	-	1,821
10. Barcodes needing to be cancelled in GEAC	2,540	-	2,540

Missing statistics for UCL can't be supplied either because UCL Circulation did the work (item #3) or because UCL doesn't have the files to make the appropriate determinations. This work will have to wait until the barcodes can be checked against Main's shelflist.

-Doug Freeman
6/10/83



OMS

System and Procedures Exchange Center

Ongoing Procedures

Geac Circulation System
Procedures for Data Entry and Barcoding
Sterling Memorial Library
Yale University

In the main research library of some four million volumes, only about 40,000 items were entered into the Geac data base before circulation began in July of 1981. In effect, virtually all data entry was done "on the fly" as books circulated. The work was performed by the circulation staff who formerly maintained paper records in the manual files. A "repeat rate" study, done prior to purchase of the system, indicated that 64% of the books circulated on an average day have been charged out before within the past five years. Therefore, after five years of "on the fly" conversion, 64% of the books brought to the desk for charging should contain barcodes. Actual experience over the past five years has matched remarkably closely the predictions of the "repeat rate" study.

The conversion procedure consists of four crucial elements:

- 1) A source file of bibliographic data.
- 2) Creation of skeleton records at the circulation desk.
- 3) Completion of the skeleton records after books are returned.
- 4) Quality control.

At Yale in 1980, we chose to load 250,000 records from a home-grown acquisitions system as the source file. This file (MATPS) was at the time the largest single source of machine-readable data for the research collection with accurate call number information. Serials, non-roman material, and books catalogued prior to 1971 were not covered by this file. At the outset, roughly 10% of books circulated were found in this data base.

When an unbarcoded book is brought to the circulation desk for charging, the attendant searches the Geac data base by call number, yielding one of the following results:

- 1) An unused source record from the MATPS file.
- 2) Another copy of the same book.
- 3) Another volume of the same set.
- 4) No exact match.

In cases 1-3 the attendant quickly links a barcode to the record found. When no record is found, the attendant creates a brief skeleton record consisting of full call number, author's last name, and various details entered into coded fields. Experienced staff can create skeleton records at the rate of one per minute.

At the time of discharge, books with skeleton records are separated from finished books and sent to the "update" stations. There the accuracy of the skeleton information is verified and the record is completed. The operator stamps a small date next to the barcode to indicate that the book has passed through the updating process. This date stamp permits the sorting of books at the time of discharge. A

good operator can create full records at the rate of 20-30 per hour (remember that these are circulation records, not MARC records).

Quality control and the training of staff are challenging tasks for the supervisor with an automated system. The data entry report is a very useful tool in these efforts. The data entry report is a complete listing of all books entered into the data base the previous day. It is divided by library and sorted by the initials of the operator, with skeleton work separated from completed records. Supervisors mark errors on the printed report, hand the sheets back to the appropriate staff members for correction, and provide additional training as required.

The procedure also permits data entry for material charged at remote locations and for material charged while the computer is down. In these cases the attendant fills in a data entry form calling for the required information. Using a pair of duplicate barcodes specially printed side-by-side on a roll, the attendant places one barcode in the book and the other identical barcode on the form. Later, the information can be entered at a terminal in the usual fashion with assurance that the correct barcode will be linked to the bibliographic information.

--Frederick Marts
Circulation Librarian
January 30, 1986

Geac Circulation System
Procedures for Data Entry and Barcoding
Sterling Memorial Library
Yale University

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--Frederick Martz
Circulation Librarian
January 30, 1986

CHARGE FUNCTION • SML

BARCODE

NO BARCODE

Search by Call Number

RECORD FOUND

NO MATCH

CALL NUMBER IS
EXACT MATCH
Volume or Monograph
Usually MATPS

VOLUME (S):
Different Volume/s
of SET found or
Call Number
needs Correction

MONOGRAPH
Same Book but
Call Number
needs Modification

COPY on
One or More
Volumes

NO COPY
on Any
Volume
Usually MATPS

NO COPY
Attached
Usually MATPS

COPY
Already
Attached

ADD CPY

ADD VOL
using volume
with copy
attached

ADD CPY
UPD

ADD FUL

CHARGE

9/1/81



OMS

System and Procedures Exchange Center

Project Summaries

LIBRARY
THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37996-1000

June 17, 1983

REPORT ON BARCODING OF COLLECTION

As 1983 began, UTK staff anticipated the early arrival of smart barcodes and the start of labelling activities in the Hoskins Main Library and Hodges Undergraduate Library. Our major concern at that time was the preparation of our full-time staff, both professional and nonprofessional, for their participation in the labelling project. A member of the Cataloging Department, who had been placed in charge of problem-solving activities, and I met with all employees in the Public and Administrative Services Divisions to review labelling procedures as they were projected, review the history of our automation activities, and answer any and all questions.

As envisioned at that time the labelling project would consist of four distinct phases:

1. Attaching the "smart" or preassigned labels
2. Labelling serial titles
3. Attaching "dumb" labels to books with 80-column punched cards and collecting data from the cards with EPIC readers
4. Attaching "dumb" labels to books with no punched cards and creating item-level circulation records directly in the GEAC circulation file

We suspected several of these phases might be worked on simultaneously.

Unfortunately, the smart barcodes did not arrive as planned. The delays eventually cost us the opportunity of barcoding over quarter breaks and vacations. The delays also resulted in substantial levels of frustration for staff who had been indoctrinated and were ready to begin. Barcodes did finally begin to arrive and were received grouped by library location within each library and call number sequence in each location.

Barcoding began in the Hoskins Main Library on February 28, 1983. Several days had been spent verifying the procedures we had developed and discovering what GEAC had really done when they created the print tape. First, although we had specified that serials were to be excluded, they were not. At least one, and sometimes, several barcodes were assigned to a serial title. Second, only closed multivolume sets were to have smart barcodes assigned; however, all multivolume sets received barcodes. Third, non-print titles were to be excluded. Again, they were included. Fourth, analyzed serials were assigned two sets of labels.

The biggest shock was having serials included. In an attempt to save time as we applied labels in the stacks, members of the Serials Department identified all serials that had received smart labels. These labels were marked with a light blue dot.

Early in our planning, we had settled on the staffing arrangements to be used in labelling. Two nonprofessional staff members were designated Team Leaders for labelling in the Hoskins Library. They were brought into the planning cycle in September of 1982 and were involved in all preparations for the project. When all labelling activities are completed, they will return to the Circulation Department. It was decided everyone from the director on down would participate in the project. We agreed two-person teams would be used to attach the "smart" labels. After assessing the impact on other library activities, we settled on five teams as the number we should aim to maintain. Teams would work a two-hour shift, during which they would not leave their assigned work areas. Breaks would be taken before or after the labelling stint. Personal phone calls would not be made or received during the time in the stacks.

Control stations were maintained in both Hodges Undergraduate and Hoskins Main Libraries where each team was logged in and out from their labelling activity. Before each team began work, the first call number and title from the sheet of labels was recorded, as well as the names of the team members. When the labelling shift ended, the call number and title of the last book labelled was recorded.

In the stacks, one person read the call number and title from the label and when the book was found, attached the labels to the item. The second person located the needed volumes on the shelves, did shelfreading and straightening. The teams worked with only the information on the label; they did not have the shelflist with them. All persons were instructed they were not to spend time uncovering problems. The only problem they would be presented with was a difference between the call number on the barcode label and on the spine of the volume. When a team discovered a problem book, they marked the label with a 1/2-inch red dot and placed the volume on the bottom shelf of the book truck they had with them. The teams were instructed that books in bad need of repair should not be labelled but pulled and forwarded to the Binding Department.

When barcode labels were finally received, a major concern was for their security. The last thing we needed was a sheet of labels being lost or disappearing. It was decided that all shipments of the preassigned labels would be received in the Systems Office. Tamara Miller, Systems Librarian and her assistant, were given overall responsibility for control of the labels and their subsequent distribution to each library.

A cataloger was chosen to control the distribution of "smart" or preassigned labels in the Hoskins Library. He worked with Tamara to insure labels were transferred from Systems to Cataloging in a timely, secure manner. Sufficient labels were kept on hand so there was no delay in labelling.

Labels were kept in a locked cabinet in Cataloging and only the cataloger or one of three alternates could release the smart barcodes. The preassigned labels could only be released to the Team Leaders who had the responsibility for directing the day-to-day labelling. Before 8 a.m. each day, the cataloger prepared the sheets of labels and placed them in folders for each team. The folders were picked up no later than 8 a.m. by the Team Leaders and distributed to the appropriate teams.

As the labelling project began, a brief meeting was held each morning at 8:30 involving the two team leaders; Head, Circulation; Head, Cataloging; problem-solving cataloger; the Associate Directors of Public and Technical Services. These seldom lasted more than half an hour, reviewing general concerns and problems. After about two weeks these sessions became less formal as routines became settled.

Teams worked for two-hour shifts: 8-10 a.m., 10-noon, 1-3 p.m., 3-5 p.m. As each team changed shifts the team leaders logged the teams out and in. When a range was completed, the team reported to the team leader who assigned them a new location. As shifts changed, problem books were collected and taken to a problem-solving station in Cataloging.

As we determined the number of teams that would be working at any time, we concluded the team leaders should vary their work day. The team leaders worked alternating half days directing teams in the stacks and overseeing the circulation-based problem-solving routines. The team leader overseeing the stacks was responsible for monitoring the progress of the teams, answering questions, fetching supplies, and whatever else was needed. The one directing circulation problem-solving received the sheets of labels that had been worked over each half day. The labels that had not been attached were checked against the microfiche copy of the circulation file from the MOHAWK system. This check revealed several categories of problems or conditions.

There were ten different categories of problems that had to be noted on the remaining labels before they were returned to the Cataloging Department. There was no space in which notes could be made, so some other method of identifying problems had to be used. Our answer was the colored dot system. Ten colors and shapes were used to identify the various problems. The dots were placed on the labels from which they could be easily removed at a later time.

As we planned the strategy for labelling, we concluded the Hoskins collection would be approached based on use. The most heavily used LC classes would be labelled first and on to those least heavily used. Data from the MOHAWK circulation system for the past three years as well as a random sample of in-house reshelving was used to rank the LC class by use. The Hodges Library labelling was approached differently. We began with the A's and worked straight through except for the P class, which was begun at the same time as the A's. We experienced identical problems with both methods because of the way in which GEAC handled our fiction, juvenile, and "easy" collections. The labels for these categories were interspersed with the F, J and E call numbers.

Labelling the Hoskins circulating collections began on February 28 and concluded on June 1, a total of 67 days. During the time a total of 403,000 sets of labels were worked through the stacks and the circulation fiche. This averaged to 6,014 sets of labels a day. The Hodges circulating collection was begun on April 7 and finished on May 12, a total of 26 days. A total of 104,000 sets of labels were worked through the stacks and the circulation fiche. This is an average of 4,000 sets per day.

The total staff cost for the people working on the Hodges labelling project was \$4,359.05. The cost for Hoskins has not yet been calculated.

Barcode Project

The barcoding of library material started in January 1984. The Project staff included a Project Director, student employees to do the actual barcoding, and library staff to supervise the students and handle problems. By June 30, 1984 422,793 items had been barcoded. From July 1, 1984 to June 30, 1985, another 306,876 volumes were done bringing the total to 724,283. (see attachments)

There were 42 student employees on July 1, 1984. The number fluctuated from 40 to 44 during July and the first part of August. The number had dropped to 32 by mid-August and most of the students stopped working for the summer on August 22, with a few working until the end of the month. The students worked in two hour shifts with three shifts scheduled per day.

During July and August library staff from various areas of the library continued to work as student supervisors and problem solvers. Three people were scheduled at a time, one for each two hour shift. They would work four weeks and then be replaced by three more. This use of library staff was gradually phased out during the last two weeks of August.

The barcoding of MAG, Reserve Reading Room, Management and the Asia Library was completed in July. In August, the Reference collection, Catalog Department, Inter-library Loan, Documents, Acquisitions, Circulation Desk, and Microtext Room were barcoded.

Concurrently in July and August Rhee's stacks was being barcoded. With the exception of ten drawers of shelf cards that had been sent to OCLC for conversion and were not returned until the last week of August, Rhee's stacks was completed by the end of August.

Procedures were established at the beginning of the summer to handle material that was not on the shelf when an area was barcoded. Department libraries would send items without barcodes to the Catalog Department. Students would barcode the material and return it to the appropriate library. The Circulation Desk staff in Rush Rhee's put items without barcodes on a separate truck. These were then barcoded by students and returned to the staging area for shelving. These procedures are still in effect although the number of items has greatly decreased in recent months.

Most of the main barcoding effort was finished by the end of August. Two of the summer students, Cheryl Davison and Charmia Daniels, continued to work during the fall semester for a total of twenty hours per week. They barcoded material set aside by the Circulation Desk staff and sent by the department libraries. They also finished the ten remaining drawers in the shelf list.

During the fall semester a recheck of the Reference collection was done. After it was completed, photocopies were made of the shelf cards for unlabeled items and given to the Reference Department. The Reference staff has located some of the items and they have been barcoded. The students also started labeling monograph sets in Rhee's stacks with more than ten volumes that had previously been marked as serials.

Two students again worked twenty hours per week during the spring '85 semester. Cheryl Davison continued to work until she graduated in May. Charmia Daniels did not return and Carla Mullins, who had worked on the Project in the spring semester of 1984, was rehired and worked until the end of April. They continued to barcode material set aside by Circulation or returned by department libraries. They also continued to barcode monograph sets. Sets in Reference, Welles Brown Room and approximately 70% of Rhee's stacks were finished by May.

Preparations were also made in February to barcode items checked out to faculty members. Circulation prepared a list of faculty and staff loans arranged by department and listing the number of items charged to each person. Working with this list most of the slips for individuals with five or fewer items charged were checked against the shelf list to see if the items had been barcoded. This allowed us to eliminate some names from the list.

Faculty studies in Rush Rhees were the target of the first effort to barcode faculty loans. A letter from Mr. Wyatt was sent to individuals who have faculty studies informing them that we would be entering the studies to barcode books. Starting on March 11, Carla Mullins and I entered faculty studies to look for unbarcoded books. In most cases the books were brought to the Catalog Department, barcoded by the student, and were then returned to the study. In two cases, items were labeled in the study, call numbers were noted with the appropriate barcode number, and the third barcode label was attached to the shelf card without the book in hand. The last faculty study was completed on March 19.

While in the studies we also looked for uncharged items. We did not remove any items from the studies. We noted the study number and call numbers of the items and turned the information over to Tommie Taylor.

Preparations were then made to visit academic departments and barcode items in faculty offices. A tentative schedule was prepared and letters were sent by Mr. Wyatt to the first departments on the list. Visits were made to 5 departments and 2 individual faculty members and 527 items of a possible 1051 were barcoded. These visits were stopped after it was decided that faculty loans would be renewed in 1985. Letters were sent to faculty members asking that books be returned during the first three weeks of June on a staggered schedule. It also informed them that any items to be renewed that did not have barcode labels would have to be left so they could be barcoded. The items would be held and could be picked up and renewed after barcoding. By June 30, 792 volumes renewed by faculty and staff had been barcoded.

One student, Jacqueline Jess, was hired to work twenty hours per week during the summer. She started on May 20. She has been barcoding returned circulation items and items left for faculty renewal. She finished the barcoding of monograph sets in Rhees stacks in June. She also did the monograph sets in the Asia and Management libraries. In Asia and Management items that had not been located were re-searched. A search for the items was also made in the main reference collection and in Rhees stacks. Some items were found, barcoded and returned to Asia and Management. The shelf cards for unlocated items were then photocopied and given to the Asia and Management staff. Monograph sets in Physics were also done in June and a re-search for unbarcoded items was started.

There are still many items remaining to be barcoded. Rechecking black jacketed shelf cards representing unlocated items is continuing. After Physics, Engineering, Chem/Bio, Math, Art, MAG and several other smaller collections will be done. As each area is finished photocopies of the shelf cards for unlocated items will be made and given to the departmental library staff for further action. After the separate collections are finished, Rhees stacks will be re-searched. When the checking of Rhees stacks is completed, locate slips will be given to Circulation for a final search. Items that then remain unlocated will be declared missing.

There are also many shelf cards with yellow jackets representing a variety of situations:

"Bound with": As soon as a decision is made about how to handle items bound together, students can start barcoding the items.

"Items in wrappers": Monographic items in wrappers should be looked at to determine whether they should be bound or barcoded as is.

"Dashed-on entries": Many items with dashed-on entries need to be recataloged.

"Temp slips or card removals": These need to be checked to see why there is no shelf card in the file.

"Books in disrepair": These items were pulled and put on the mending shelf in Serials and Binding.

Staff from other areas of the library will have to be involved in making the decisions about some of this material.

The largest single number of items left to be barcoded are serials. Discussions about the barcoding of serials need to be initiated and some decisions made about how to handle them.

To accomplish barcoding tasks during the coming year, twenty hours per week of student time has been scheduled for the 1985 fall semester and ten hours per week for the 1986 spring semester.

BARCODE STATISTICS FOR JAN. 1984-DEC. 1985

UNIVERSITY OF ROCHESTER

	JAN-FEB 1984	MAY-JUG 1984	SEP-DEC 1984-85	MAY-JUG 1985	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	CUMULATIVE TOTALS
ITEMS LABELED BY LOCATION									
In-Process	5,386	0	0	0	0	0	0	0	5,386
Press	60,974	500,422	24,227	4,693	322	221	1,364	1,461	593,851
Acquisition	0	51	1	0	0	0	0	0	52
Art	0	34,745	136	15	0	0	0	1	34,897
Asia	0	1,247	0	193	1	0	0	0	1,446
Catalog	0	559	17	56	0	0	0	0	432
Chem/Bio	15,573	165	49	1	29	97	1	2	15,917
Circulation	0	11	0	0	0	0	0	0	11
Documents	0	176	2	1	0	27	0	0	205
Engineering	14,655	525	65	105	41	22	2	2	15,247
English Seminar	0	3,538	3	0	0	0	0	0	3,541
Geology	6,748	362	4	45	0	34	0	0	7,193
ILL	0	16	0	0	0	0	0	0	16
LLE	2	659	11	6	0	0	0	0	678
MAG	0	13,153	53	4	0	0	0	0	13,216
Management	2	1,501	13	141	3	0	158	0	1,813
Math	11,158	390	21	5	0	108	4	11	11,677
Microtext	0	166	1	3	0	0	0	0	167
Physics	7,939	148	29	127	0	21	0	0	8,214
Rare Books	1	0	0	0	0	0	0	0	1
Reference	0	11,563	918	1,066	2	345	410	2	14,505
Reserve Reading	0	196	0	0	0	0	0	0	196
Welles Brown Room	2,323	45	16	75	0	0	0	1	2,460
MONTHLY TOTAL	124,821	566,038	25,572	6,525	378	1,475	1,839	1,483	731,128
JACKETED SHELF CARDS BY COLOR CATEGORY									
Black	13,953	38,294	549	4	0	0	13	0	43,813
Green	1,237	3,598	20	0	0	0	0	0	4,825
Yellow	2,034	4,321	147	2	0	0	0	0	7,074
MONTHLY TOTAL	17,164	43,513	716	6	0	0	13	0	61,512
JACKETS REMOVED									
	4,058	13,870	5,369	3,491	515	512	615	571	29,071
JACKETED SHELF CARDS REMAINING									32,441

THE UNIVERSITY OF MICHIGAN LIBRARIES

BARCODING

The Geac Circulation System was installed in the University Library System in two major phases, with the system operational first in the Hatcher Graduate, Undergraduate, Taubman Medical, Natural Science, Engineering and North Engineering Libraries and the University Reserve Service. The following year Art and Architecture, Public Health, Music and Dentistry libraries also began implementing Geac.

Brief bibliographic records (excluding holdings information) were loaded from the libraries' OCLC and RLIN tapes, representing all library materials cataloged from about 1976 on. Dumb barcodes were ordered (see attached specifications) of two types: single barcodes, and "double" barcodes (duplicate barcodes, with two identical machine readable barcode labels.)

It was the responsibility of the individual libraries to barcode the materials, link the barcodes, and in the case of pre-1976 cataloging records, key in a manual record. Units employed a variety of methods to do this barcoding, depending on the size of their collections, percentage of material expected to circulate (and/or expected to already have a tape-loaded record), and staff resources available. An attempt was made to barcode and link as much material as possible before live circulation began. Several of the barcoding methods are described below:

1. Items returning from circulation were barcoded before being re-shelved. A book truck-load at a time, staff applied the barcode, and searched the Geac database for a record. If one was found, the barcode was linked; if a record was not found, a brief record was keyed in, using bibliographic data from the piece in hand, and the barcode was linked.
2. "Coding sheets" were used by some libraries, especially for circulating serials. Staff took these sheets to the stacks, and using double barcodes, attached one label to the piece on the shelf, and one to the coding sheet, also writing the call number and other brief information on the sheet. Staff at a Geac terminal would later search the Geac database from the coding sheet, linking barcodes and/or creating a bibliographic record from the sheet.
3. Some units used double barcodes by applying one to the book, and one to a circ card in the back of the book -- these cards were either IBM-type cards from the old Singer system, or the manually prepared typed cards for those units that were using manual circ systems. The database was then searched, and the record linked, from the book card.

This method continues to be employed in many units when an unlinked book is brought to the circulation desk; the item is charged to the person "manually", with the basic patron information written on the book card or a paper form; when the item is later linked, the charge is made to the patron.

Because it was not assumed that most libraries would have the resources to enter all of their materials into Geac, the option of physically labeling all books in the stacks with barcodes, and later linking them, was not employed by most libraries.

Management of the barcoding was under the individual direction of each library manager. Most units employed student employees or Library Assistants for most of the barcoding/conversion efforts.

-- Rebecca Dunkle

Summary

Northwestern University Library's lengthy experience with automation was a rare asset, for it enabled the library staff to conceptualize and comprehend the differences between the old and new circulation systems, making planning, reorganization, project implementation, and procedure revision smoother.

Extra time was taken in the planning stages of the Bar Code Project, to test and change the size of the call number printed on the labels, and to apply the extra long labels. But these precautions paid off in the structure provided the staff when they donated time to the project. By then, supervisors were well versed in the mysteries to be uncovered in the stacks, and the staff were well prepared through training. The most pronounced benefit was in the extensive organization of the workflow through which problems funneled. A month of practice had enabled the Circulation Department to prepare shelves, forms, and workers for the onslaught to come.

It was to this project's advantage to have had planners flexible enough to be able visualize a level of implementation at one-third the cost of what had been planned originally. They did not take for granted that it would be all or nothing. Even at the reduced level, they covered all political bases in generating project funding.

Statements like, "Work study students never work in the summer," were not accepted at face value, but investigated with hope of policy change.

It was crucial to involve a variety of people in the planning process. Their ability to present the Bar Code Project to their colleagues as a positive act, done out of pride in the Library and its goals, made a difference in how the staff approached it. Thorough training and supervision also were keys to the project's success.

The positive cooperation exhibited between the Library and university, and among the Library staff were necessary for a project of this magnitude to have been accomplished in so little time. The after effects of the project will be a sense of team achievement and a positive presentation of a new system to the public.

UCSD LIBRARIES BARCODE PROJECT

The project was a year in the planning and during that time various options were considered. After having consulted with other university libraries who had completed such a project, it was decided to proceed with a retrospective barcoding project as opposed to a rolling project which would involve barcoding items at the point of circulation. Furthermore, the final project reflects the decision to barcode only those circulating monographs for which a machine-readable record had been created. Serials, reference items, Special Collections materials, and monographs with unconverted bibliographic records were not to be barcoded.

To generate the call number specific barcodes, which would be linked to each bibliographic record, the OCLC archival tapes were run against a specially written program which isolated the OCLC record number and call number randomly assigning barcode numbers for each holding library which held the book. The resulting barcode tape was forwarded to a vendor, who then generated the sets of barcodes from the tape. The barcode tape will be loaded into the BLIS database following the loading of the OCLC archival tapes, thus programmatically linking the barcode to the bibliographic record.

Scheduling was the most complex issue. Staff members were requested to sign-up for time slots, either 8-3 or 10-5 (with an hour for lunch). However, we had to contend with staff working reduced schedules as well as the need for some staff to perform essential services, i.e. payroll, mail delivery, etc. From the sign-up sheets, staff members were grouped by schedules and then assigned to teams of 10-14 members with like schedules. Each team was headed by a team coordinator who served as a resource person for the team and a contact person for me. I must say that the team concept worked very well indeed, as it promoted solidarity among members who were very goal oriented. In total, 169 staff members took part in the project.

The libraries of UCSD were not closed during the project, with the exception of the Undergraduate Library, but hours were very limited and only staff and students were permitted entry. The libraries were closed to all outside users during the project.

The procedures are enclosed and describe the barcoding of individual items with call number specific barcodes, and the barcoding of added volumes and/or copies with generic barcodes. Training was performed the week before the project and involved a practice session with the barcodes and procedures.

The problems encountered during the project were minimal and primarily consisted of the following: no shelflist which resulted from the added copy/volume portion of the project, book repairs, labeling discrepancies, duplicates, and duplicate sets of barcodes (resulted from the same call number being used for two separate OCLC records).

**LABELING PROJECT
ACCESS SERVICES
FINAL REPORT**

08-28-85

Arizona State University

Purpose: To attach OCR (optical character recognition) labels to all items having bibliographic records in the first two ALIS database loads. [total number of records involved, approximately 360,000]

BUDGET

Original Allocation 1982-83 fiscal year	\$22,170.00
Add'l funding 1983-84 fiscal year	8,260.00
Add'l funding 1984-85 fiscal year	<u>14,000.00*</u>
Total Project Funding	\$44,430.00
Allocation spent	43,094.24
Amount remaining	1,335.76

* Figure includes \$484.09 for one maintenance person for ALIS terminals and COM readers.

MANHOURS

1982-83 fiscal year	4,957.75
1983-84 fiscal year	2,697.75
1984-85 fiscal year	2,668.50*
Total	10,324.00

* Includes 147.75 hours for one maintenance person for ALIS terminals and COM readers.

CURRENT STATUS

<u>BRANCH</u>	<u>% OF ITEMS LOCATED AND LABELED</u>	<u>STAGE OF THE PROJECT</u>
Architecture	92.0	Final
Ariz/AHF/ARV	96.1/95.3/99.0	Final
Curriculum	98.1	Final
Hayden	98.2	Final
Maps	95.5	Final
Micro (Hayden/Sci)	96.1/95.0	Final
Music	97.4	Final
Science	96.7	Final

Overall Error Rate - 1%

All workbooks & information have been given to the Technical Services area for final processing.

DIVISION OF LABOR

Items Addressed By Access Services

- Monographs (including microforms), scores, and recordings in all branches
- Monographs in Arizona, Arizona Historical, Archives, Chicano, East Asian, and Curriculum collections

Items Addressed by Technical Services & Not Included in this Report

Serials-circulating; monographic sets; items with volume designation on the label/spine.

Items Not Yet Addressed

Serials-noncirculating; Special Collections

Access Services Labeling crew (10 staff 200 hrs/wk & 10 students 200 hrs/wk) conducted the first and second sweeps in all libraries and locations. At that point the crew was reduced to 2 staff 40 hrs/wk and Music, Architecture, Science became responsible for their areas; Hayden continued to use Labeling Project personnel.

Exception: Arizona Historical Foundation, the Microforms areas in Hayden and Noble, and Government Documents with direction from the Access Services project were responsible for their own labeling.

METHODS

INITIAL

Two means for locating materials needing labels were used:

- 1) Working from computer generated lists & sheets of corresponding OCR labels, staff searched the stacks by call number for items and labeled matches found.

Items not found using this method had call numbers verified in the shelf list, discrepancies were noted and corrections in the item record made if call # on the worksheet was not correct, and second and third sweeps of the stacks were done.

NOTE: During the initial sweep & subsequent shelflisting, items which had volume designations were noted on the worksheets. These items were no longer looked for by Access Services ... the information was made available for the Technical Services Labeling Project.

- 2) Items were also checked for labels as they went through the book return. Those without OCR labels already attached were channeled through the labeling routine.

NOTE: Science did attempt to attach original labels at Circ Desk as patrons brought unlabeled items to be charged out, but process proved too time consuming and was discontinued.

FINAL

Two means are being used for final cleanup of the Access Services Project:

- 1) The Labeling Crew set up a routine now being followed by the circulation departments for handling items having the same call number as a record in the original project but circulating on a different OCR number. (See attached memo of March 26, 1985 for details on how these are being processed).

- 2) In Hayden and Noble, for items not found, a processing status of WITHDRAWN was put on the item record. A final report listing items in call number order has been run. Music and Architecture did not use this option. (Approximately 5,450 records have been given this status -- Hayden 1,900, Science 3,550)

RECOMMENDATIONS

For Items Not Found

- Item call number is circulating on a different OCR number from the one in the original project:
Continue in all branches to process these through book return/conversion routine.
- Items given a status of WITHDRAWN:
Should be processed through the current system for MISSING/WITHDRAWN items and considered for replacement, as they fall into the same category as items declared MISSING by the public services areas. (i.e., they have been searched for a minimum of 3 times over a period of at least 6 months and not located).
Note: This recommendation comes from the public services point of view (these items have not been available for our patrons for an extended period of time), and does not take into account replacement vs cost of manhours for additional searching/possible locating of additional items not found/fee for fewer replacements.
- Final processing for Curriculum, Maps, Reference, East Asian, Chicano, Business (had not been completed awaiting decisions on procedure to be used):
That these items be treated in the same manner as the general stacks items, given a status of WITHDRAWN and channeled through that procedure.

For Areas Pending

Special Collections:

That workbooks and labels be held in the Special Collections area until such time as the decisions have been reached. It is possible that information contained on the worksheets might prove useful to the department even though the labels are not actually attached to the items.

Serials-noncirculating:

A review of ITEM SEQUENCING is currently being done by Tech Services-Systems Support. Recommendations may be made after this function has been examined.


08-28-85

From: Annual Report of the Circulation
Dept, Michigan State University
Libraries, East Lansing, MI 48824,
1979-1980.

A. The CLSI LIBS 100 Circulation Control System at MSU: A General Overview

During 1979-1980, the MSU community was introduced to the exciting new capabilities of the CLSI LIBS 100, the minicomputer-based circulation control system installed in the main library in June 1979. Unfortunately, many who checked out materials during the fall of 1979 found their first impression of the system in action to be less than favorable--*waiting* to have zebra labels affixed to their ID cards, *waiting* to have previously checked-out materials checked in from the old system, *waiting* to have zebra labels affixed to library materials, and *waiting again* while frustrated student library assistants scanned and scanned the zebra labels before the erratic light pens would read them accurately.

The implementation of CLSI brought many surprises which required changes in planned procedures. Most surprising for the Circulation Department staff

members was the overwhelming workload created by having materials checked out on two separate systems--training staff and students to use two different automated systems, solving problems created by two systems, having equipment of both systems malfunction (usually simultaneously). It was amazing to learn by first-hand experience that Murphy's law and its corollaries always apply: *If anything can go wrong, it will; everything takes longer than expected; every solution breeds new problems.* For instance, as more and more books were zebra-labeled and checked out,* additional data entry terminals were acquired in an attempt to keep up with the volume of data to be input. Until this data is entered, there is no link between the zebra number and the bibliographic record for the book to which the label was attached. Overdue notices created before this link exists contain only the fourteen-digit zebra number rather than author, title, and call number. Hundreds of mystified patrons began to call, wondering how they were supposed to know which one of their books was overdue. They had a very good question, and every student employee had to be able to answer it clearly and tactfully.

As more terminals were used for data entry, system response-time slowed, patrons waited longer at the check-out stations, data to be entered backlogged further. Although tremendous progress has been made, some data entry backlog still exists. Until data entry is current, overdue notices lacking bibliographic information will continue to be produced and status information for items not yet entered is not accessible via a terminal.

The initial CLSI data base was created by entering brief bibliographic records for the 344,000 monographs which had circulated since 1972.** It was anticipated that the public terminals would be used by patrons mainly to inquire about the circulation status of materials. However, even though the data base is only a partial record of library holdings, patrons immediately began to use it as a catalog. As a consequence, plans have been made to install more public terminals than originally anticipated. And the concept of CLSI has a "Quick Use Access File" which was developed by the MSU Libraries Catalog Coordinating Committee in 1978-1979 has come into question. The future of the CLSI data base needs to be evaluated carefully from both a public services and a technical services point of view before decisions regarding its expansion can be made.

Because response time was slow, much of the planned data entry simply could not be accomplished. We had anticipated entering bibliographic records for all newly-cataloged materials, but only records for materials which have been rush-cataloged are entered before the items are shelved. Records for other new materials are not entered until they are checked out for the first time. In another year, it is planned that bibliographic records for all new acquisitions will be entered weekly from magnetic tape. Until that time, the card catalog is the only source of complete information on new materials.

There has been less cooperation than expected from MSU faculty and staff in returning items checked out on the old circulation system. It is

*See "Conversion of Records of Circulation Transactions," part E below.

**See "Conversion of Master Book Tape Records," part C below.

hoped that the plea which accompanies the lists of old charges which will be mailed next fall will result in the return or renewal of these materials.

B. Conversion of Master Book Tape (MBT) Records to Create the CLSI Data Base

1. Background. The Master Book Tape (MBT) contains brief machine-readable records for all monographs in the MSU Libraries. It was created in the late 1960s to convert from manual circulation control to batch processing. After the initial conversion of shelf-list records, records for monographs were added to the MBT by keying data from slips provided by catalogers. Books were held until weekly processing produced a machine-readable card for each book. As a result, the MBT is a complete record of all cataloged monographs and each monograph contained a machine-readable book card.

2. Creation of the CLSI bibliographic data base. The MBT conversion for CLSI was based on two assumptions. First, no matter what other purposes CLSI might (eventually) serve, its major objective was to provide circulation control. Second, it was anticipated that items previously circulated on the batch system would account for approximately 80% of the circulation on CLSI.

The 344,000 title records for the monographic titles which had circulated from 1972 through June 1979 were selected from the MBT, reformatted, and loaded into CLSI from tape to create the initial TITLEFILE. As titles circulated which were not in that initial file, title records were manually input. As of June 1980, an additional 63,000 title records had been input for a total of 407,000 title records.

C. Conversion of Patron Data

It had been planned that records for all students registered at Michigan State University during Spring 1979, all faculty/staff members who received end-of-term library reminder notices during Spring 1979, and all current permit-holders would be loaded from tape into the CLSI data base. Due to various programming problems, this patron data base never materialized and all patron data entered last year was manually input. As of June 1980, 32,476 CLSI patron records had been entered.

Next year, quarterly updating of student address information and the quarterly sanctioning of expired permits should be possible from magnetic tape.

D. Conversion of Circulation Transaction Records

Except for the few exceptions explained below, items (copies of books) were zebra-labeled at the point of check-out on CLSI rather than being labeled on the shelves before starting to use the system to record circulation transactions, a process commonly referred to as *Conversion-on-the-Fly*. When an item is presented by a patron for checkout:

1. The information on the book card is checked for accuracy against call number and copy number on the item; errors are corrected on the card.

2. A zebra label is affixed to the inside front cover of the item.
3. A label bearing the same fourteen-digit number as the zebra label is affixed to the book card.
4. The item is checked out to the patron by scanning the zebra label.
5. The card is filed for input to the CLSI data base.

The information on the book cards is later input into the data base in the manner explained below:

1. A terminal operator locates the correct title record in the CLSI data base by using the bibliographic information on the book card.
2. If the title record cannot be located, a title record is created. (For monographs, short title records are created using only the call number. For serials, bibliographic information is entered from the Serial Holdings List entry. For multi-volume monographic sets, bibliographic information is entered from the shelf-list record.
3. The item (copy) record is entered and linked to the title record by the terminal operator.

Because of slow system response time and the number of title records which were not in the initial data base (approximately 12.5% of the items checked out in 1979-1980), data entry lagged behind checkouts during Fall term. New software and additional CPU memory installed in January 1980 improved response time enough that data entry remains current except during the two or three weeks each term when over 2000 items circulate daily.

Inputting of monographic item records during the year was accomplished by work study student library assistants. The more complex serial and set items were added by staff in the library Data Processing Unit. No bibliographic information for multi-volume works was loaded into the data base initially. As of June 1980, 233,341 item records had been keyed-in to the system.

During the month of September 1979, student library assistants placed zebra labels in the most heavily-used materials in the Undergraduate Library (LC classifications B, H, L, and P). During the same month, all items being returned through Discharging were zebra-labeled. Other student assistants keyed the item records for these books into the data base. Labeling went much faster than inputting, and a large file of cards soon backlogged. When the backlog became evident, labeling in Discharging ceased.

During June 1980, the rest of the Undergraduate Collection was labeled. Inputting of these items records will not be completed until at least the summer of 1981.

Report on the Installation of an Automated Circulation System

by

Carolynne Presser
Assistant Librarian for the
Engineering, Mathematics and Science Library

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IMPLEMENTATION OF THE SYSTEM

LABELLING THE COLLECTION

While all tasks relating to the implementation of the system were, of necessity, equally important, none were of the magnitude of the collection labelling project. In January, 1977 a decision was made to create a temporary position within the Systems Department and a Circulation Project Supervisor was appointed whose responsibility was to oversee the labelling of the collection. Specific accountabilities included the preparation of schedules, the development of procedures, and the training of all staff involved in the labelling.

The first task identified was the development of standards for labelling materials, i.e. how many items could be labelled during what time period. These standards were extremely important given the firm commitment to a target date of September 1, 1977. The terms of the contract actually specified that the system was to be installed and operating in a test mode by August 15, 1977. Many libraries in Canada, the United States and Great Britain had installed or were installing circulation systems employing bar-codes, but their experiences were not reported in the literature. Private correspondence with York University (Toronto), and Carleton University (Ottawa), revealed information about their collection labelling experiences.

York reported that a collection of 190,484 items had been labelled in three months. Eleven students were hired and, using five teams of two with one student supervisor, two labels and a date due slip were attached to each volume. At Carleton, twenty-five teams of two, applied one label, to approximately 110.8 items each

hour and thus labelling a collection of 400,204 items in three months. Waterloo determined that to complete an initial labelling of 800,000 items would require 2000 man hours per week for three months, assuming teams of two persons working a three hour shift each day, treating 100 items per hour. The monographs in the collection were designated as first priority, with periodicals as the next category. Other materials such as microforms and phonodiscs were to be included at a later period.

Volunteers were recruited from all levels of the Library staff. The hiring of an additional 21 student assistants allowed for the organization of 60 teams of labelers in all. In order to minimize the disruption of other library activities, thirty teams worked during three hour shifts, morning and afternoon. Library staff were asked to contribute a minimum of nine hours per week. Members of the Circulation Department worked 15 hours per week, while the extra students were employed for 30 hours per week. A schedule was established and labelling partners assigned. Members of the Circulation Department were paired with staff from other departments who were less familiar with call numbers, date, copy and volume notation. The preselecting of teams was abandoned after the first week since too much time was being lost in locating or waiting for the arrival of an assigned partner. Teams were created for each shift as staff appeared at the designated meeting place.

In April, a training program was begun for all Library staff who would be labelling. The project supervisor explained the program to groups of 20, using charts to outline the actual labelling procedures and outlining the treatment of possible problems. In preparation for the training sessions, the project supervisor prepared flow charts for each of the procedures. The critical procedure was the actual labelling of each item. Six main problem areas were anticipated: "label, no book", "book, no label", "pocket relocation", "repair first", "bound together", and "other". An example of the flow chart to explain the labelling of an item (LP-1) is displayed in Appendix D.

Each team was supplied with a "labelling kit" containing the following materials: one roll of labels, one roll of mylar (to be affixed as a protective cover on each label), 1 pencil, a pad of green problem sheets, a box of paper clips, an LP-1 procedure sheet and a yellow slip for recording the area labelled. In addition,

each team was given a book truck to be used during its shift. (60 book trucks were transported to the labelling site, gathered from all Library departments.)

To generate a positive attitude toward this gigantic project, a logo was devised: the cartoon character Pogo, whose name was expanded to "Project of Gigantic Order". In addition t-shirts with a barcoded label on the front were produced for staff to wear (if they chose to) while labelling. To heighten further the expectations of library users, daily progress was displayed indicating the number of items labelled during a day. As well, large signs were posted in the labelling area warning Library users that "the labellers are here."

The first few days of the labelling project were rather chaotic and many procedures had to be altered to allow for unexpected problems. For example, the original instructions called for a "book, no label" to be removed from the shelves and transported to a holding location; this proved to be physically impossible, given the number of volumes involved. Instead, the call number of books without labels was recorded on specially prepared green problem sheets. Another set of instructions which had to be disregarded concerned the re-location of the book pocket. The pocket should have been on the inside front cover of the item. If it was in any other position, the labellers were instructed to remove the book from the shelf for later treatment. The large number of "pocket relocations" problems generated could not be handled by staff and it was decided not to move pockets at all.

As each team began and ended the shift, they filled in a slip noting the call number of the first and last items labelled. These slips were collected and turned over to the trouble shooting team which was responsible for sorting approximately 200,000 problems generated by the labelling project. The largest problem area was generated by books without labels ("book, no label"). Any such book was checked against the shelf list to verify the call number and the existence of the item. Unresolved problems were forwarded to the Cataloguing Department for further investigation and action. It was assumed that many books would be in circulation, in spite of the fact that the labelling took place over the summer, a traditionally slow period for some faculties. Notices also were sent to all those having books on extended loan asking them to return as many as possible. The "label, no book" problems were sorted into call

number order and checked against the outstanding loans. As books without labels were returned to the library they were checked against the file and labelled at the circulation desk.

An unintentional by-product of the labelling project was that a complete inventory of the collection was carried out. If an item could not be identified as being in circulation, it was declared to be missing. This information was recorded on the system using a specific missing category which served to identify items missing during the labelling project.

Another responsibility assigned to the trouble shooters was quality control. The slips turned in at the end of every shift were used by the team and one book from each shelf was examined for errors. Few mistakes were detected, with the main error being the inadvertent placing of two unmatched labels on one book. This resulted in several books on one shelf being one label off.

Many of the problems encountered could have been anticipated had there been time for a full test run of labelling. However, since time was not available to conduct adequate testing, the Project Supervisor and troubleshooting team became very adept at providing quick solutions to problems as they arose. These ranged from attaching large plastic garbage bags to book trucks to control the flow of paper strips generated by the label backing to recognizing that some staff required retraining and sometimes a single labeller was more effective than a two-person team.

In order to assess the reality of the target date, statistics were kept on number of items labelled. Of most interest was the rate at which items were labelled: approximately 109 items per hour, per team. Several factors influenced this figure. It appeared that the labellers slowed down on Fridays and, as the project proceeded, the labelling teams slowed down. Many staff preferred to work on their own. Those working alone could accomplish approximately 74% of the work that a team accomplished in the same amount of time. As the project progressed, more labellers preferred to work alone. As interest and enthusiasm flagged, volunteers dropped off. Calling on the University Librarian to provide unexpected bonuses, such as coffee and donuts, helped the spirits of the labellers and the target date was met.

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